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THE

Odontographic Journal.

VOLUME XI.—*April, 1890.*—*No. 1.*

ON THE CLEAVAGE OF ENAMEL IN THE PREPARATION OF CAVITIES.

The operation of filling teeth, whether with gold, tin or other material, necessarily involves two steps—the preparation of the cavity and the introduction of the filling. Both these steps are important, and the successful termination of the second is largely dependent upon the correct performance of the first. That a tooth may be well filled, it is certain that the cavity must be properly prepared ; that such preparation may be possible, the cavity must be accessible ; and, when prepared, the walls should have sufficient strength to resist the forces exerted in the operation of filling, as well as in mastication, and to prevent the consequences so apt to follow or attend the misuse of instruments for the removal of food from between the teeth.

As you know, the margins, or edges, of the walls of cavities consist, in some cases, of enamel, dentine and cementum ; and in others, of enamel alone. The last statement is more especially true of cavities which open upon the grinding, buccal and lingual surfaces of molars and bicuspids ; and upon the labial, lingual, and (in the majority of cases) mesial and distal surfaces of incisors and canines. Cavities which open upon the mesial and distal surfaces of bicuspids and molars may, and in some cases do, possess walls having margins of enamel ; but generally more or less of the enamel of these surfaces is removed by the chisel, disk or file, the cavity opened from the grinding surface, and the filling trimmed flush with the cut side of the tooth. In cavities thus prepared—a style quite common with the opponents of "contour" filling—enamel margins are always found at the grinding surface, occasionally at the sides towards the tongue and cheek, never at the neck.

You all have examined teeth which have been filled for years, and have been, perhaps, surprised at certain peculiarities exhibited by the tooth in close proximity to the margins of the filling. These are, color and structure; the first varying from very slight difference with that of the tooth to brown or black; the second ranging from a mere defective line to a coarse, ragged border. In many such cases the conclusion may have been jumped at that the operation was originally a poor one, and the operator a bungler. Such a conclusion must be pronounced, to say the least, hasty and unjust; for the filling may have really been one of the best, and the operator almost without a peer; and yet, simply because a thing, very slight in *apparent* importance, had been overlooked, the operation now does him very little credit, and has not contributed very greatly to the salvation of the tooth. It is this seemingly little thing to which it is the object of this paper to draw attention.

In well-formed and well-filled cavities which open upon the grinding surfaces of molars and bicuspids, and the outline of which is considerably within the axes of the cusps, the more or less discolored and defective line before spoken of is rarely seen; but it is much more common in cases where the cavity-outline encroaches upon the summits of the cusps or passes beyond them.

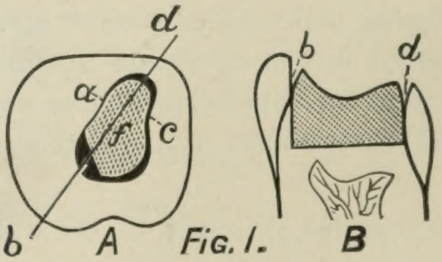
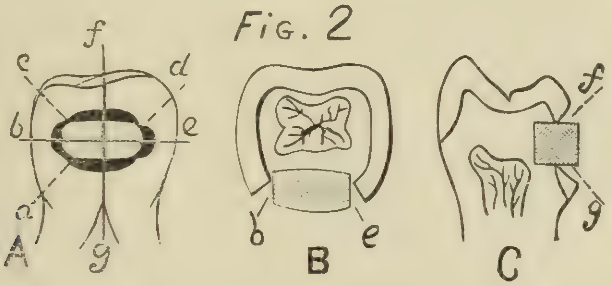


FIG. 1.

A, Fig. 1, is a diagrammatic representation of the grinding surface of a molar, containing the filling, *f*; at *a* is seen a mere line of discoloration at the margin of the filling; at *b*, *c*, and *d*, this line is much darker and broader, and the tooth-substance here seems broken or disintegrated. At *b* the edge of the filling is at, and at *d* is beyond, the axes of the cusps, and the amount of discoloration and disintegration is, as seen, proportional to the distances of these points from the centre of the crown. This figure illustrates the facts to which I made allusion before, that as the outline of such a cavity approaches the vertical axes of the cusps, the conditions favorable to the formation of this defective line are increased; and that when the summits of the cusps are passed the color is deepest in tint, and the enamel breakage at its worst.

B, Figure 1, is a vertical section through the line *b*, *d*. Here the filling is seen to possess edges clearly cut and well defined, while the margin of the cavity is broken away, in a definite and uniform direction, *that of the enamel rods.* The breakage at *b* is less than at *d*, because the peculiar inward curve described by the enamel rods in this part of a cusp here approximates the line of the cavity wall; while at *d* the breakage is greatest because here the enamel rods, being upon the outward side of the cusp, trend away from the filling. Any slight undercut, particularly if near the surface, will intensify this condition.

Fig. 2



In cavities which open upon other than the grinding surfaces of molars and bicuspids and the lingual surfaces of incisors and canines, this defective line is found on three sides—right, left and next the grinding surface or cutting edge. It is also found on that side next the gum, in teeth the enamel of which retreats or curves suddenly toward the roots. A, Figure 2, represents a molar having a filled cavity on its buccal surface. Beginning at *a* and following the edge of the filling upward, we find a considerable defect to exist at *b*—the point nearest the angle formed by the buccal and distal surfaces of the tooth. From *b* to the side toward the grinding surface the defectiveness grows less (*c*); but immediately increases, when that side is reached, to proportions which it maintains until the opposite side corresponding to *c* is attained (at *d*), where it again decreases, widening again, however, at *e*, the point corresponding to *b*. B, Figure 2, is a horizontal section through the line *b*, *e*, and shows the breakage of the enamel at these points. In cases of a sudden curvature or retreat of the rods toward the root, the line of breakage is shown at *g* in C, Figure 2, and that toward the grinding surface at *f*.

In cavities of the mesial and distal sides of incisors and canines, the defect under consideration is quite as remarkable as in the cases just noted. A cavity in either of these places may have the appearance shown in A, Figure 3, where *a* represents the defective portion, the greatest amount of breakage being on the side toward the cutting edge of the tooth, and being increased by any undercut. A vertical section is seen in B, of the same figure.

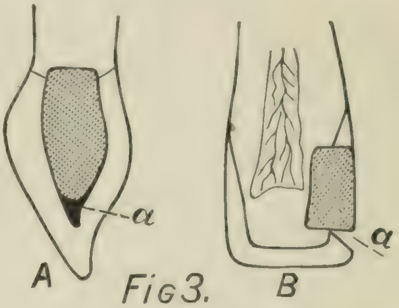


FIG 3.

The circumstances which make possible such defects as shown may be found in the direction of cleavage of the enamel and the form of the cavity. Whether the splitting line of enamel is between the rods or through their centres, is not essential to the present aspect of the subject. It is certain that the line of cleavage follows the direction of the rods. In a well formed molar this direction may be generally formulated as being in right lines, diverging from a point in the pulp cavity between the neck of the tooth and the apex of the root, and quite near the neck. In suddenly retreating crowns, as in bell-shaped teeth, the rule is that this point of divergence (at least for that portion of the enamel nearest the neck of the tooth) is between the neck and the grinding surface or cutting edge. In cusps and their modifications the direction of the rods is peculiar, and has a practical bearing of some value.

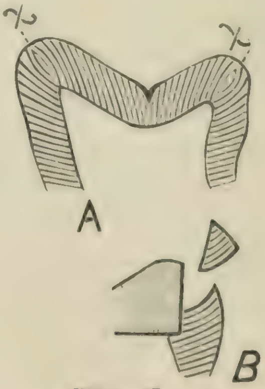


FIG. 4.

At *b*, in Fig. 1, the cleavage is within the summit of the cusp, while at *d* (same figure) it is beyond. The fracture at *b* is due primarily, to the peculiar curve described by the enamel rods of the cusp, which do not radiate from a centre common to those rods otherwise situated, as is usually represented, but curve upon each other, the outer upon the inner, as shown in A, Figure 4, at x, x. It will be easily seen that the liability to fracture is greatly increased when the cavity is undercut; but, whether undercut or not, the summit of a cusp cannot be approached from the center of the crown without more or less risk being incurred. When the summit of the cusp is passed, no undercut is needed to ensure fracture or cleavage of the enamel; for it will then occur in despite of every precaution (other than the proper preparation of the cavity with regard to the cleavage line), should this particular part be worked upon by the plugger, or come in contact with an opposing tooth or other hard substance.

The form of cavity which contributes most to the failure of fillings is that the walls of which are at a right angle with or perpendicular to the surface of the tooth, or more or less undercut, either in the substance of the enamel or beneath it in situations where that structure is very thin, as at the necks of teeth. If undercuts are properly placed, *beneath* the enamel and *in* the dentine, and the edges or margins properly shaped, there need be little fear of enamel fracture at the edges of the fillings, in teeth of reasonable strength.

As one of the secondary circumstances which lead to the formation of the discolored and defective line before noted, may be named the operation of inserting the filling. The impact of hard cylinders of gold may, in cervical walls, dislodge particles of enamel, but this defect is much more likely to attend or follow the use of cohesive foil, when that form of gold is placed in the cavity in small pieces and sent " home " by the hand (or automatic) mallet. Where the mallet is not used, it is replaced by hand pressure, and the rolling and rocking of the instrument, with its occasional misplacement at the edges of the cavity, tend to detach variously-sized masses of enamel-rods at such points (See Fig. 4, B.). This roughening of the margins of a cavity may account for the readiness with which acid secretions take hold on the tissue at such points, as also for that appearance of secondary decay which, too often, soon follows filling. The sides of cavities next the buccal, palatal, labial and lingual surfaces, as well as more distant parts, are quite as likely to be broken by the plugger point.

The same results follow (if they have not occurred before) after the gold has been introduced and while its condensing is in process, whether the hand or mallet be used. Much force is usually expended in this part of the operation, with the result of a rough and ragged margin.

Another secondary cause of enamel breakage is the use of the burnisher to produce a bright, hard finish. Hard burnishing will thoroughly pulverize the margins of badly formed cavities, and thus leave a groove encircling the filling, which needs only time to ensure discoloration.

The use of rottenstone on moistened tape will clearly reveal any defect around the filling, at once after it has been inserted, and may cause the operator to wonder " how it happened that he failed to pack his gold close to the margins of the cavity," the truth being that he had simply destroyed those margins during either the introduction or finishing of the filling.

Mastication, as has been already said, is also an agent in producing marginal cleavage in enamel. This force is peculiarly hurtful where gold, amalgam, or Wood's metal filling, are used. Tin is the only metallic filling around which the line of discoloration does not often occur. This is because the metal is so soft and readily compressed and moulded into defective places by the occluding tooth, that the space left by any enamel cleavage (which undoubtedly happens with tin as with other fillings) is quickly filled up.

After the filling has left the care of the operator, there remains still another mechanical agent the works of which are evil—the toothpick. The margins of cavities of friable teeth are readily broken away by a very stiff quill pick, and those in the strongest teeth cannot withstand metal picks. The amount of fracture in these cases is certainly slight, but it is quite sufficient to allow secondary decay an excellent chance for its beginnings.

And now a word about that form of cavity which, in the judgment of the writer, is best calculated to preserve its own integrity, to prevent secondary decay, and to maintain the comfort and usefulness of the tooth.

If the (perhaps too many) words already used by the writer have any evident moral, it is that the walls of any cavity, in any tooth, and in any surface of that tooth, should be cut in the line of cleavage of the enamel. Where the enamel is thin it is not safe to undercut, except in the dentine. Where it is thick the walls may safely be cut out of the line of cleavage.

To sum up—bevel the walls of the cavity in the line of cleavage of the enamel, and, if possible, to the full thickness of that tissue.—*Dental and Oral Science Magazine.*

THE FUTURE OF DENTAL LITERATURE—THE PROFESSION NOT "WRITTEN OUT" AS YET.

In a recent issue of a contemporary dental journal the opinion was editorially expressed that "the profession is largely written out." We should be very sorry to accept this conclusion,—very sorry to have the profession accept it. A general concurrence in that idea would be detrimental to the last degree.

It is true that in the handicraft of dentistry very satisfactory attainments have been reached and gratifying results secured,—triumphs of mechanical skill, of manipulative ability,—yet neither operative nor prosthetic denistry has reached the *Ultima Thule* of practical development, and until they shall have done so the books cannot be closed and the official notice posted up, "Written out." These departments belong to the practical side of dentistry, which it is sometimes claimed has been developed to the neglect of the scientific certitudes which ought to underlie practice. There are many problems remaining to be solved.

It is also true that in dental pathology and therapeuties, in the diagnosis, prognosis, and treatment of abnormal conditions, great progress has been made in the last two decades ; yet who will claim that the end has been reached ?

It is true that much good work has been done in the study of the etielogy of caries and of irregularities, but there is room for still further investigation, still further advances.

There are, besides, fields almost wholly untilled which invite scientific labor and research and promise valuable results.

In the hope of interesting some who may be debating as to the special direction in which they may work with pleasure and profit to themselves and for the benefit of the profession and of humanity, we suggest that fruitful inquiry might be made in any of the following lines :

"The correlation of systemic and mental with dental developement."

That there exists a correlation is not to be disputed ; its extent and significance are yet to be determined. There are probably in the characteristics of the dental organs indications as to whether imbecility in a child is the result of intra-uterine influences or of subsequent causes. The determination of this question would furnish data for diagnosis and prognosis of great importance in many cases.

"The relation of diathesis to the physical characteristics of the teeth, maxillæ, and palate."

Whether there are in the character of the teeth, their alignment, etc., any pathognomonic indications of hereditary gout, rheumatism, tuberculosis, cancer, etc., is a problem worthy of investigation.

"The distinguishing registration on the teeth by the eruptive fevers or other infantile diseases."

That the interruption of nutrition caused by infantile diseases is recorded in the dental organs there is no question. Are the records of the various derangements distinguishable? Can those made by the eruptive fevers or by mercury be surely discriminated from those resulting from syphilis?

"The influence of cachexiæ in the causation of caries."

Pathological systemic conditions find usually a more or less strongly pronounced expression in the mouth. It is reasonable to think that the effects vary with the varying cachexiæ. Are there distinguishable differences? If so, what are they?

"The laws of correlation in their application to the restoration of lost dentures in harmony with the physical organization."

Prosthetic dentistry is yet far from being an exact science. The ability to meet in each individual case the demands of the law cf correspondence can be obtained only by a better comprehension of the law itself.

"Normal and abnormal eruption of the deciduous and permanent teeth."

This subject has not received from dentists the attention to which it is entitled. The relations of race, country, climate, civilization, and food to dental evolution are worthy of systematic attention, and should include data concerning time and order of eruption, irregularities of sequence, abnormalities of arrangement, undue or diminished size of certain teeth, structural peculiarities such as stunted growth, want of continuity of enamel, etc. Such records should include as well observations of the palate, whether narrow and vaulting or unusually broad and flat, hanging palate, cleft palate, relative size of the superior and inferior maxillæ, etc.

"The influence of intermarriage upon the dentures of the pregeny."

The concurrent testimony of various observers upon this point would be a valuable contribution to other records concerning the physical and mental results of consanguineous generation.

"The peculiarities of the maxillæ and teeth in children relatively to those of the parents in the marriage of those of differing nationalities, differing or similar temperaments, and other physical characteristics, such as height, weight, and relative age of parents."

Relevant data would be interesting and useful.

"The modifications of the salivary and mucous secretions by various diseases and influences."

That the products of the mucous and salivary glands vary in different systemic conditions in character and in their effects upon tooth-structures, as well as upon the soft tissues of the mouth, has been generally recognized, but the specific alterations and varying effects under changed conditions should be more closely observed than they appear to have been.

"Systemic derangements manifested in the mouth."

The influences of malaria, gout, rheumatism, hysteria, mechanical injury to or morbid growth in a nerve-center or in the brain, the sympathy of contiguity or neuralgic radiation in diseases of the eye or ear, should be carefully studied and the details recorded, thus helping others to accuracy of diagnosis and prognosis and to perception of the therapeutic, surgical, or mechanical indications.

"Systemic disturbance due to causes existing in the oral cavity."

The systemic inharmonies induced by peridental inflammation, by exostosis of the roots of teeth or by the exposure or death of their pulps; the direct or sympathetic relations of the teeth with the entire physical economy; the relations of the teeth with the entire physical economy; the relations of contiguity with the eyes, ears, nares, and the antra of Highmore, are surely worthy of more systematic observation and record than has yet been given.

"The character of the decay to which the different varieties of teeth are liable by virtue of their original structure.

This is a consideration which should always be taken into account when the methods of treatment are discussed,—whether to file or fill, how and with what.

"The modifications in the tendency to and of the character of the decay at puberty, during gestation and lactation, and at the climacteric."

At these periods sympathetic constitutional disturbances are usually present, "new balances are struck," functional and organic changes take place, digestion and assimilation are more or less modified, with consequent modifications of the mucous and salivary secretions involving liability to injurious action upon tooth-substance. Nutritive changes at these periods exert also marked influence in the promotion or retardation of caries.

"The causes of variation in the crowns and roots of teeth."

Anatomical variations in the crowns and roots of teeth expressing perverted function, reversionary tendency, or mechanical interference are interesting subjects of study in the individual subject and from the stand-point of heredity.

"The etiology of dental irregularities."

This subject has recently received considerable attention, but merits more profound study and research.

"The influence of oral respiration on the positions of the teeth and on the health of the mouth."

"The influence of the tongue over the positions of the lower teeth."

These subjects are worthy of special study as factors in the causation of irregularies.

"The relation between dental caries and diet."

Although much has been written on this subject, we have scarcely any data which may properly be called scientific.

"On the distribution of dental caries."

Every dentist should keep an accurate record of the localization of caries, and these individual observations should be collated and published.

"On the relation between race and tooth-form."

If this subject were properly worked up, we would probably have one of the best guides to identification of race.

"The value of the teeth in speech, especially the influence they exert in lisping, stuttering, singing, etc."

Until all the various offices of the teeth are fully comprehended their value will not be fully appreciated. With more knowledge, not only the profession but the public will come to regard the loss of a tooth as a real misfortune, its unnecessary extraction a crime.

"The significance of the variations in the rugæ."

A paper entitled "The Palatal Rugæ in Man" was read by Dr. Harrison Allen before the Academy of Natural Sciences, and published in the *Dental Cosmos*, for January, 1889. In this paper, well worthy the study of every dentist of scientific proclivities, the autho- propounds and endeavors to answer the following queries: What variations from the type met with in the lower animals are seen in man? How do these variations in him associate themselves with morbid states? With what structures do these variations correlate? What forces are at work to produce in man results so different from those seen in the animals related to him?

"Do retrograde variations in the density of tooth-structure—either enamel or dentine—occur after full eruption of the tooth by virtue of alterations in the nutritive processes induced by pregnancy, neurasthenic conditions, cachexiæ, etc.?"

That there is a progressive structural change in the teeth after eruption, that at first they do not have the compactness and hardness which subsequently characterize them, is not questioned, but it is not so generallv admitted that variations in density are consequent upon modifications.

"The molecular structure and chemical proprieties of amalgams and amalgam alloys."

The domain of dental chemistry offers a tempting and fruitful field for experimental research. Though comparatively little has been done in this direction, the results so far obtained have been in a high degree important and valuable.

"The molecular structure and composition of plastic materials for fillings."

A full knowledgs of the relations and effects of the constituents of amalgam alloys and cements, as to kind, number, and quantity, would result in the production of better compounds for the purpose, and place the manufacture upon a scientific basis instead of the commonly empirical one upon which it now rests.

The ideal plastic should be soon forthcoming, in view of the advances made by chemical science in other lines of technology.

These suggestions and queries presuppose an increasing ability, inclination, and facility for the scientific prosecution of investigations on the part of dentists which shall command for dentistry as a clearly defined profession or specialty of medicine the recognition and respect of the scientific world.

The concurrent or conflicting testimony of various observers is needed as to each problem, and the correlation of what appear to be facts in order that intelligent deductions may be made and satisfactory conclusions reached.

So far from dentistry being written out, we are but just beginning to realize the complexity and the significance of the problems awaiting solution. The investigation of such topics by each of a score of workers will change the estimate of the public, widen the purpose of instruction, and enlarge the field of labor. Having more to do, the teacher will do more; and doing more, will not only become more himself but will help the student to do and to be more.

To do more and be more, or to do less and be less, is compulsory; a forward movement or retrogression is inevitable. "All things retrograde which do not advance" is an axiom which applies alike to the college, the periodical, the society, and to the individual.—Editorial, *Dental Cosmos.*

TIN.

When one considers how long this metal has been before the profession as an article for stopping carious teeth, there would seem but little probability of offering any new thought or suggestion concerning its peculiar usefulness or characteristic qualities to-day. To the veterans of the profession it is indeed an ancient friend and ally, and though eclipsed for a season, nay, well-nigh supplanted by amalgam, yet, if I read aright the signs of the times, evidence is not wanting of a revival of interest in, if not a marked and distinct tendency of returning to a larger, more frequent employment of the old-fashioned and, as I hold, eminently efficacious material, *tin.* Forty years ago when a pupil in the office of an alert and progressive dentist of the period, I was taught to confine my efforts at "saving" carious teeth to filling with one or two metals only. It was gold—soft gold we at present name it, in contradistinction to another form, the so-called cohesive—or it was tin. These and nothing else. None other was tolerated. Amalgam was ignored or prohibited. The plastics, gutta-percha, oxychlorides and oxyphosphates of zinc, at that date had not, as filling materials, been introduced to the profession. How and in what form did he use tin? Invariably in the shape of folded ribbons of light-weight foil. A sheet of this was divided into two, three or four equal parts and folded or doubled, superimposing one lamina upon another till reduced, as the case might demand, to one or two lines in width. Then with a curve-pointed plugger it was tucked into the cavity, from right to left, from left to right, fore-and-aft till quite full, usually concluding this particular part of the operation by thrusting a stout, conical-pointed tool, if the cavity was fairly accessible, through the centre of the mass, and into the space thus forcibly gained inserting a final block of foil as a wedge or key to the whole filling. Add to this condensing with broad-faced pluggers, scouring or polishing with pumice, then a final burnishing and the case was considered complete. Briefly stated such was our mode of procedure when filling with tin thirty-five to forty years ago.

That it was primitive and crude none need be reminded ; or that manipulated as indicated the resulting plug would prove inadequate to the restoration and maintenance of lost contours may be set down as palpable or self-evident. That in a majority of instances such fillings were a long remove from density, at all events from solidity, once for all let it be confessed and affirmed. Despite the fact, however, that manifestly they not infrequently *leaked*, yet no inconsiderable percentage of these leaky fillings when removed and subjected to scrutiny revealed another fact, namely, the subjacent dentine might be discolored (it usually was) but little or no resumption of decay was present—it might even be showing symptoms of eburnation.

Here the question may be raised, nor indeed would it be inapposite to the matter in hand, how or why it happened we had so much experience in removing those tin plugs ? The answer is not far to find. As made at the period under consideration (and just here was the prime defect of such stopping), the tin plug when exposed to the direct action of mastication was not slow to abrade, to diminish by attrition. Hence it transpired, not rarely within a space of three, sometimes in two years or less, so much of the metal had frittered away that its removal and a subsequent re-filling became imperative. Happily the "prime defect," alluded to above, cannot be lodged as an objection to its employment under later methods, of which I shall have something to say further on.

Other lessons ran parallel with these going to show therapeutic properties of tin as an obtundent of hypersensitive dentine. But for the risk of being prolix I should relate how this fact first presented itself in my own practice. Suffice it to say, it *did* present itself early in my career and become a not unprofitable acquisition to my stock of professional knowledge. In cases where from excessive sensitiveness the patient was on the eve of incontinently terminating the sitting, I have stuffed the partially prepared cavity with tin, dismissed it for a time to find when next we met at the chair the hypersensitiveness greatly abated if not wholly absent.

Toward retarding the undue wasting of the filling from mechanical abrasion, to which reference has been made, my first efforts were in the nature and shape of cylinders of heavier foil, cylinders rolled with much firmness and compactness. Something was gained by this treatment, but not nearly enough. On occluding surfaces of molars and bicuspids especially the tin plug still persisted in its mischievous habit of diminishing quite too rapidly for permanent work. The evil was only modified, not cured. Eventually the want was met, the difficulty overcome by simply using heavy foil (No. 20 or still heavier), cut to narrow strips, *not* folded or doubled, and made strongly adherent to foundation pellets or other underlying portions of the metal by *interdigitating* with sharp and boldly serrated pluggers. Armed with these and a mallet it was quickly found and demonstrated how readily and securely dense resistant contours could be laid on, which in the ordeal of mastication, would wear passing well and yield results in other directions equally gratifying.

And so it comes about that I am a believer in tin. While its successful manipulation at the hand of the operator requires greater care and a higher order of skill than amalgam, yet as a tooth-saver it will be found more trustworthy. Pliant and tractable under the instrument it adapts itself easily and accurateiy to surface and margin; packed as a filling it never perceptibly shrinks or expands ; discolors as little or less than amalgam, behaves kindly in contact with fretful dentine and in some way, not clear to the writer, exerts a restraining influence against recurrence of decay in critically conditioned cavities—an influence and control not exhibited by gold and not by amalgam. Especially true is this last, of lateral cavities in molar and bicusped teeth where the decay extends to the gum margin. So potent do I consider its efficiency as this particular point that when about to fill with gold I rarely neglect to commence by first laying along the cervical border a pellet of No. 4 tin foil, following up and finishing with the more precious metal. This done I have a sense of security against a re-appearance of decay at the special danger point, a sense of protection and safety which the application and presence of no other metal furnishes or affords.

This paper may be open to the criticism of being more retrospective than didactic. As the topic comes to me it is inevitable that it should be, for whatever estimate I may place on tin, or whatever value it may have to me as an article for filling and preserving teeth, is but the direct and legitimate outcome of forty years experience in its employment and observing the results.—Harlan.

In the February number of the *Ohio Journal*, Dr. S. H. Harlan has something to say of this metal well worthy of attention. As it is short, better the whole article.

He speaks of the " therapeutic properties of tin as an obtundent of hyper-sensitive dentine." While we clearly understand the import of his remarks, may it not be well to raise a question as to the nature of these properties, and inquire whether or not it has any such properties in the metallic state.

Tin is a very valuable metal in dental therapeutics. Whether we understand its value or not is another question. It has not a very strong affinity for most of the non-metallic elements or re-agents. When tin fillings corrode in the mouth the re-agent is likely to be chlorine rather than oxygen. It is well to be minute, as oxygen is regarded as head devil in chemistry.

Now we see where the therapeutic action comes in. Chloride of tin, or stannous chloride, acts definitely on the organic matter of the tooth, rendering it less soluble, and consequently less liable to decay. We cannot imagine any other way in which tin is likely to exert any medicinal action on dentine.—Editorial, *Ohio Journal of Dental Science.*

REPORT OF THE SECOND HYDERABAD CHLOROFORM COMMISSION—PRACTICAL DEDUCTIONS.

I. The recumbent position on the back and absolute freedom of respiration are essential.

II. If during an operation the recumbent position on the back cannot, from any cause, be maintained during chloroform administration, the utmost attention to the respiration is necessary to prevent asphyxia or an overdose. If there is any doubt whatever about the state of respiration, the patient should be at once restored to the recumbent position on the back.

III. To insure absolute freedom of respiration, tight clothing of every kind, either on the neck, chest, or abdomen, is to be strictly avoided; and no assistants or bystanders should be allowed to exert pressure on any part of the patient's thorax or abdomen, even though the patient be struggling violently. If struggling does occur, it is always possible to hold the patient down by pressing on the shoulders, pelvis or legs, without doing anything which can by any possibility interfere with the free movements of respiration.

IV. An apparatus is not essential, and ought not to be used, as, being made to fit the face, it must tend to produce a certain amount of asphyxia. Moreover, it is apt to take up part of the attention which is required elsewhere. In short, no matter how it is made, it introduces an element of danger into the administration. A convenient form of inhaler is an open cone or cap with a little absorbent cotton inside at the apex.

V. At the commencement of inhalation care should be taken, by not holding the cap too close over the mouth and nose, to avoid exciting, struggling, or holding the breath. If struggling or holding the breath do occur, great care is necessary to avoid an overdose during the deep inspirations which follow. When quiet breathing is insured as the patient begins to go over, there is no reason why the inhaler should not be applied close to the face ; and all that is then necessary is to watch the cornea and see that respiration is not interfeared with.

VI. In children, crying insures free admission of chloroform into the lungs ; but as struggling and holding the breath can hardly be avoided, and one or two whiffs of chloroform may be sufficient to produce complete insensibility, they should always be allowed to inhale a little fresh air during the first deep inspirations which follow. In any struggling persons, but especially in children, it is essential to remove the inhaler after the first or second deep inspiration, as enough chloroform may have been inhaled to produce deep anesthesia, and this may only appear, or may deepen, after the chloroform is stopped. Struggling is best avoided in adults by making them blow out hard after each inspiration during the inhalation.

VII. The patient is, as a rule, anesthetized and ready for the operation to be commenced when unconscious winking is no longer produced by touching the surface of the eye with the tip of the finger. The anesthetic should never under any circumstances be pushed till the respiration stops ; but when once the cornea is insensitive, the patient should be kept gently under by occasional inhalations, and not be allowed to come out and renew the stage of struggling and resistance.

VIII. As a rule, no operation should be commenced until the patient is fully under the influence of the anesthetic, so as to avoid all chance of death from surgical shock or fright.

IX. The administrator should be guided as to the effect entirely by the respiration. His only object, while producing anesthesia, is to see that the respiration is not interfered with.

X. If possible, the patient's chest and abdomen should be exposed during chloroform inhalation, so that the respiratory movements can be seen by the administrator. If anything interferes with the respiration in any way, however slight, even if this occurs at the very commencement of the administration, if breath is held, or if there is stertor, the inhalation should be stopped until the breathing is natural again. This may sometimes create delay and inconvenience with inexperienced administrators, but experience will make any administrator so familiar with the respiratory functions under chloroform that he will in a short time know almost by intuition whether anything is going wrong, and be able to put it right without delay before any danger arises..

XI. If the breathing becomes embarrassed, the lower jaw should be pulled, or pushed from behind the angles, forward, so that the lower teeth protrude in front of the upper. This rises the epiglottis and frees the larynx. At the same time it is well to assist the respiration artificially until the embarrassment passes off.

XII. If by accident the respiration stops, artificial respiration should be commenced at once, while an arristant lowers the head and draws forward the tongue with catch-forceps, by Howard's method, assisted by compression and relaxation of the thoracic walls. Artificial respiration should be continued until there is no doubt whatever that natural respiration is completely re-established.

XIII. A small dose of morphia may be injected subcutaneously before chloroform inhalation, as it helps to keep the patient in a state of anesthesia in prolonged operations. There is nothing to show that atropine does any good in connection with the administration of chloroform, and it may do a very great deal of harm.

XIV. Alcohol may be given with advantage before operations under chloroform, provided it does not cause excitement, and merely has the effect of giving a patient confidence and steadying the circulation.

The commission has no doubt whatever that, if the above rules be followed, chloroform may be given in any case requiring an operation with perfect ease and safety so as to do good without the risk of evil.—*Lancet.*

THE PRACTICE OF DENTISTRY FROM A FINANCIAL STANDPOINT.

The successful practice of dentistry, pecuniarily, is doubtless the aim of all who engage in it. There may be some who go into it with a scientific object, who, like Agassiz, do not wish to be troubled about "making money;" but these, we presume, are probably in the very smallest minority. The realities of life are such that it is not a question of what we *would* do but what we *must* do.

We propose to lay before our readers some thoughts, statistics and truths, which we have gleaned for their consideration, both for and against.

Among the *ten or twelve thousand* dentists who, it is estimated, practice this calling in the United States, we have discovered that only *three hundred and twenty are partnerships* Most of these are between brothers and between father and son, making about three per cent. of the number so engaged. Among physicians the percentage is about the same. With lawyers the percentage is greater, while in commercial pursuits there are very few men who carry on a business without a partner or partners, making the percentage hard on to, if not quite, seventy-five.

Whether this paucity of association be attributable to suspicion, jealousy, incompatibility of temper, or the teachings of experience as to which is best, we are not prepared to state.

With merchants, one of the firm will attend to the finance, another to the selling, and still another to the buying of goods, so that the labor of business is proportionately divided.

We perceive in certain men in our calling an aptitude in one for the management of a practice. He will have a plausible exterior, a winning expression, a taking manner, an attractive deportment. We know of cases of such men who were deficient in professional qualifications, yet who, on account of having these attributes, carried on a most successful business ; while others without these qualifications, yet well up in the material practice of their art, were left far behind in the race. It may be that if partnerships between men possessing different qualifications were formed, such association would redound to their pecuniary advantage. The trouble is generally in such cases that the *worker* gets discontented. He complains *inwardly* that he, Smith, is doing all the work, while Brown does nothing but talk and say agreeable things to the ladies. He does not stop to consider that to say these agreeable things is *Brown's work or qualifications*, without which there would be little or no work to be done, while he, Smith, though he does the work, owes to Brown the work which is brought by Brown's manners. In another sense a dentist is not so tied down to his office with a partner as without one. Most of us get prematurely old by the constant strain upon us, while a relief could be had, both physically and mentally, of a few weeks or days of recreation when we feel particularly jaded, and yet, knowing that this needed rest is taken with no detriment to our business interest, such rest would be most beneficial.

We know of partnerships being formed among lawyers because of certain qualifications; thus one of the firm would be particularly suited for *office work*, another for the collection of the *pertinent points of a case*, who might have no ability of language to make use of them, while still another, if the points were given him, *his eloquent tongue* would carry conviction to the minds of the jury. Thus by the combination of qualifications, several are made to succeed, while failure would attend the efforts of each singly.

We do not mean that partnerships would be beneficial at all points, but especially *in large cities*. In villages, hamlets, or small towns, business is too circumscribed for considerations such as we have advanced.

In large cities where a large practice is secured by a dentist, we have been informed that such men really make less, and are more harrassed than another dentist in a small town doing one-eight the amount of practice, in consequence of the greatly increased expenses of living, rents, appointments, and style which the one is forced to keep up, which the other is not subjected to. Thus with a practice of ten thousand dollars a year (which is one which only the few exceed) in a large city, among a fashionable class, in a fashionable neighborhood where high rents, expensive style, appointments, etc., etc., etc., are the requirements, such a practitioner will rarely save more than one or two thousand a year; while the small practitioner, quite as well qualified, in the small town with a practice of twelve to fifteen hundred a year, can readily save from eight hundred to a thousand dollars per annum, and this with no worry, no misgivings about the collection of bills, no strain of a large practice, and not tied down to business like the ten thousand dollar man.

We glean from the same source, that in large cities the revenue from the practice of dentistry will run from twenty-five thousand to two thousand dollars per annum. Perhaps two or three *at most*, out of a number of three hundred and fifty dentists in a large city may attain the former amount. Eight or ten may make ten thousand dollars per annum; twenty may attain a practice of five or six thousand per annum; a hundred or more will attain from twenty-five hundred to three thousand, and the remaining two hundred will struggle on with a revenue varying from twelve hundred to two thousand dollars a year.

We are informed by a leading physician that the revenue from the practice of medicine bears about the same proportions; some of the leaders *exceeding* the practices of leading dentists, but the bulk of the lesser lights having a revenue from its practice rather less than the bulk of dental practioners.

From what we learn, the employment of assistants by dentists whose practice requires help, is not in favorable odor. The employment of lady assistants to do the many services required about an office is rather growing in favor, in preference to a regular graduate assistant to whom may be referred such cases which cause too much interruption to dentists in full practice, yet even these are attended with certain drawbacks.

So much then for this side of the picture; let us examine the reverse.

The dentist and the physician hold more confidential relations with their patients, hence this may be the cause which prevents the formation of co-partnerships. Very many persons are extremely sensitive about their defects, and conceal these from their most intimate associates. We know of a lady who had a small gold plate with one or two teeth, which she wore for twenty-five or more years of her married life without her husband's knowledge, and very many are quite solicitous lest the "gold will show" for fear of their friends supposing they have defective teeth. We have likewise heard of the following case: Some years ago a lady called for an appointment for dental work. When it was fulfilled and the dentist had made an examination for such work as was needed, he remarked that the work that she had had done to her teeth was unusually good, and her whole denture gave evidence of excellent dental care. "Yes," she answered, "I have no fault to find with the dentist I employed or the work he did for me; he has attended to my teeth a long time, and I regret being obliged to change; the only reason that I do so is that I cannot go to his office to fulfill an appointment without meeting his wife; she is always about, and if any one comes in whom she knows, she comes in the office to entertain them and stands by while they are in the chair. Now I like the dentist's wife very well, and am always pleased to meet her socially, indeed we exchange calls, and it is a pleasure for me to do so, but when I call upon her husband professionally, I consider her presence an intrusion. I am compelled to exhibit my defects to him, but I am not disposed to do this to any one to whom I am not compelled, and as I find that I cannot go to see him professionally without meeting his wife and have her also look into my mouth and at my teeth, I have left him."

We have heard of a dentist who lost many good, desirable patients from the employment of assistants, and some to such an extent that they finally left the profession.

A friend of mine told: "I lost several patients whom I highly prized when I first introduced an assistant. Patients that *he* never worked for and whom I should not have placed in *his* hands. They told me plainly that they refused to sit in my chair knowing that there might be another patient and operator within hearing. Some left rather than even to let another make an appointment for me. These I know of ; how many did likewise that I did not know the reason of their leaving me, I cannot tell." It is difficult to understand or to reconcile the many peculiarities of people. One patient will get quite angry if pain is suddenly inflicted, saying, "If you are to hurt me I want to be apprised of the fact, when I will brace myself to submit to the pain. Another will say, "If you are to hurt me I want to know nothing about it ; it will frighten me more if you tell me before hand that you are about to give me pain." Such are the temperaments of people. The objections to the presence or knoweldge of "a third party," it is true, are in the large *minority*, but when we take into account the many peculiarities of patients and the impossibility "to please all," these straws show which way the wind blows," and may be taken as an objection to partnerships in the practice of dentistry and professions allied thereto.

The suggestion of a good business manager and a good operator making a good combination is open to the same objections as we have mentioned, and an additional one. If it worked well, and each was satisfied with the share of work each did, the fact would still remain that the work that paid and produced the income would be done by one pair of hands, and it is questionable if that pair of hands would produce double the amount of work with the business man's help that they would without it ?

If the operator was so little attractive in his manner and deportment that without that help he could do nothing, it would seriously detract from his usefulness at the chair, notwithstanding the fact that he might be a perfect operator. It is indeed questionable whether those qualifications needed in the business manager are not equally needed at the chair, and whether the real success is not as much due to managing the patient while operating, as in managing the practice and business ?

In Europe, we are told that the business head or manager may have a half dozen or more operators under him, assigning to one or another work of this or that nature, as it presents, to one or the other of his assistants according to the known aptitude or specialiy of each, thus doing all the real business while the operators under him do the work which he assigns. Yet though such arrangements may be pecuniarily successful there, we rather doubt its success here in America. Such a combination would not be considered "first-class," but would carry with it an odor of empiricism.

In the matter of partnerships, there is more union of interests between "father and son" and "brother and brother," than between strangers, however great may be the congeniality of temperament between these; and we would naturally look for less friction in the former associations, as well as less objection on the part of patients, than in the latter.

The subject of *taking rest* has not attracted as much attention as it should. Taking rest can certainly be easier done when the "bread and butter" question is not particularly pressing. But is time taken while resting really lost time? Does a needy operator, one, to make a strong case, who feels the loss of a single patient, risk more by a week's vacation than by a week's sickness? Would not the prespective patient be more apt to call again if told that "the doctor is taking a week's vacation, and will be back in a week's time," than if told "the doctor is sick but getting better, and will undoubtedly be all right again in a week's time?" Would not the uncertainty implied in the latter message, the probability that if well enough to work he might not be strong enough to do the work well, carry with it a doubt on the part of the patient, rather inducing him to seek some one else? The world, or the people in it, are like children of larger growth, and what seems out of their reach will induce them to make greater exertions to attain it, and all experience shows that persons are more disposed to help the man who is independent, or who needs help least, than the reverse. The mere fact that the Doctor was able to leave his business for a week or more would be to many a strong recommendation in his favor. Is not a jaded operator very liable, as the result of very weariness, to do unsatisfactory work for the new patient, whom he feels he cannot put off? He must get the thin edge of the wedge in if possible, by doing something; the old patient, or the one he feels secure of, he will ask to "call again." How much good will the work he thus does for the new patient redound to his credit, or do him in the long run?

We have presented these views on the "Practice of Dentistry from a financial standpoint," in both of its phases, as a subject which is not often written upon, that our readers may view it for their best interests and advantage and decide for themselves which is best.—Chupein, *Dental Office and Laboratory.*

THE TEACHING OF PROSTHETIC DENTISTRY.

There is no more important branch of dental science than that of prosthetics, and requiring more time for its instruction than the operative department. It is a well recognized fact that it requires more skill to make a successful denture than to fill a difficult cavity.

But there is imperative need of an entire change of method of instruction in this department.

The following are some of the reasons for a change :

It covers a much broader field than any other department. There is too much of didactic and far too little of technical teaching. More time consequently should be devoted to it, even at a sacrifice of a portion of some other study, be it anatomy, chemistry, or what not. There should be more attention paid to metal work and less to rubber. The classes should be smaller or more demonstrators provided, or, as I will state further on, a more radical change still.

I have long realized the necessity for this change, but it has been greatly emphasized by the number of letters of inquiry in regard to the " Post-Graduate School " from graduates of the various colleges, who complain of the inadequate instruction they have received in this department. These complaints do not come from the class of students in colleges who avoided as far as possible the laboratory while in college, but from those who were anxious to learn as much as possible.

Prosthetic dentistry *cannot* be learned in the lecture room, and were less of the student's valuable time spent there listening to talks about the " expansion of plaster," and other equally unimportant matters, and long descriptions of methods that can be made intelligible *only* by the clinic, there would be great gain in time to his advantage.

Then he spends a great deal of time pouring over a text book, where is given such a variety of methods that he is bewildered, knowing not which to choose.

I claim that the lecturer should have a well defined theory and method of his own. He should be able to condense this theory into the smallest possible amount of words. He should be able to go into the laboratory and fully demonstrate his methods. For this purpose he should receive a salary that would enable him to devote the time necessary to fully accomplish this object. He should have competent demonstrators who are familiar with *his* methods. It is often the case that the demonstrator's methods are not in accord with the lecturer's, and it is often the case that the demonstrator is a recent graduate with little or no experience.

When the lecturer thus becomes a demonstrator he should not sit down and simply answer the questions that are asked him, but should go from student to student and see *how* they are doing, and if not doing right take the case in hand and show them, at the same time giving reasons why it should be done so and so.

The *large classes* are unfortunate for the student who is anxious to learn. Five hundred students can listen to a lecture as well as one, but in the laboratory the chances of twenty-five are far better than a hundred.

In order to secure more practical work in metal plates, a large portion of the partial sets should be made of *silver* (use pure silver alloyed with platinum). The cost is but a trifle more than rubber. By this means the student's experience in swaging, fitting, adjusting clasps, grinding on in some cases gum-teeth, investing, backing and soldering, is greatly increased. Full plates can be made on aluminium instead of rubber. When this is done the professor can with better grace and truthfulness sign the diploma which announces that the graduate is qualified to *practice* dentistry.—Haskell, *Ohio Journal of Dental Science.*

MICROMILLIMETRE—A MILLIONTH OF A MILLIMETRE —"MICRON."

Prof. A. W. Rücker observing that the word micromillimetre is used as equivalent to the *thousandth* of a millimetre, and being told that it is now commonly employed by biologists, and especially by botanists, with that meaning, protests against such a use of the word.

As he thinks it would be very unfortunate if the same word were habitually used in different senses by students of different branches of science, he points out that, according to the definitions of the C. G. S. system, a micromillimetre is the *millionth* of a millimetre.

In the well-known report of the committee of the British Association for the "Selection and nomenclature of dynamical and electrical units," it is laid down that the prefixes *mega* and *micro* are to be employed "for multiplication and division by a million." This ruling has been generally accepted not only by scientific men, but also by those engaged in commerce. *Megohm* and *microfarad* are terms which are used in contracts, and are universally understood to mean a million ohms and a millionth of a farad respectively. It will be hopeless, he thinks, to try to introduce scientific systems of measurement into the affairs of daily life if scientific men themselves disregard the rules on which those systems are framed.

It would also, in his view, be particularly confusing if the micromillimetre was wrongly used by microscopists. In its proper sense it is the most convenient unit in which to express molecular magnitude. It has been employed for that purpose by Sir William Thomson and others in England, and also by physicists abroad. If the micromillimetre of the microscopist is 1000 times too large, all sorts of mistakes will be rife as to the relative dimensions of molecules and of the smallest objects visible with the microscope.

The proper name for the thousandth of a millimetre (μ) is, in his view, the *micromētre*, and though the similarity of this word to *micromĕtre* is no doubt a drawback, it is not likely that confusion could arise between them. He therefore begs respectfully to suggest that botanists should bring their nomenclature of units of length into conformity with the definitions of the C. G. S. system. Otherwise there will be a permanent confusion between the micrometre (μ) and the micromillimetre ($\mu\mu$).

On the other hand, Mr. H. J. Chaney suggests "that even the denomination 'micromētre' may be hardly acceptable to scientific workers. The denomination for the measure of the one-thousandth of a millimetre (μ), or 0.000001 metre, is 'micron,' and not micrometre.

"For the 'micron' we have the authority of the 'Comitè International des Poids et Measures.'" One shudders at the thought of the confusion likely to arise when computers are required to deal with both micromētre-units and micromĕtre-divisions.

"The Comité International have also recommended the use of the following metric denominations for minute measurements :—

Denomination.	Symbol.	Equivalent.
Micron	μ	0.001 millimetre.
Microgramme	γ	0.001 milligramme.
Millilitre	ml.	0.001 litre.
Microlitre	γ	0.000001 litre."

Mr. A. D'Abbadie also writes to say that "here" (presumably Paris), *micron* is currently used to express the 1 \| 1000 mm.; while Mr. R. B. Hayward proposes a new nomenclature which would convert the micro-millimetre into a "hexametret."

The Council of the Society having considered the question raised by Prof. Rücker, decided, as announced at the April meeting, that the term "*Micron*" should in future be used in this Journal and in the official proceedings of the Society, in place of micro-millimetre. It was felt that the term micromētre from its similarity to micromĕtre (especially in French) was unsuitable.—*Journal of the Royal Microscopical Society.*

WHAT IS THE BEST METHOD OF PERMANENTLY FILLING PULP-CANALS?

The growing importance of this question must be admitted by all careful observers. The operation is called for much more frequently since the mass of intelligent dentists have found that pulp-preservation, after actual exposure, is an operation attended with too many failures, and as the cases of canal-filling multiply, it naturally follows that the question of the best method of root-canal-filling becomes more and more a permanent question. It also must appear, to any one who comes in contact with the methods of a considerable number of dentists, that there is a great variation in the manner of filling root-canals. The question, then, is still an undecided one.

If root-canals are thoroughly prepared and perfectly filled, there will be no future disease ; this we believe and will not discuss. The question is how it shall be most perfectly done. It is an old question, but, as the President of the Odontological Society of Philadelphia said at its last meeting, "There is good picking on the old bone yet." At that meeting, which we had the pleasure of attending, a paper was read which strongly advocated permanently filling root-canals with "carbolized cotton." In the discussion which followed, we found that the essayist was not the only one who practiced filling roots with cotton ; indeed, one speaker earnestly advocated the practice chiefly upon the ground that the cotton was easily removed when trouble ensued ! ! ! It is needless to say that the level heads in the Philadelphia society were strong in condemnation of such practice, but it shows, as we have stated, that there is a great variety of methods practiced by well-known dentists when it comes to dealing with root-canals which require a permanent filling.

It is not our purpose, at this time, to say anything about preparatory treatment before the canal-filling is introduced, nor to speak of extreme or individual cases that require special treatment, but to reiterate what has often been said about the materials in common use, viz., gutta-percha and oxychloride or zinc. Excellent root-fillings can be, and often are, made with gold foil, tin foil, and amalgams, but in many ways these materials are inferior to the two first mentioned, and in no respect are they superior. As for cotton as a permanent root-filling, we cannot conceive a decent reason for its use—except as a vehicle for the introduction of the oxychloride. Of the two materials, oxychloride and gutta-percha, we give preference to the former for two reasons : first, because the union between the material and dentine is perfect ; and second, because it cauterizes and makes fixed material of the organic matter which may remain in the canal and in the dentinal tubes ; it also makes a better foundation for the gold to be introduced than gutta-percha does. On the other hand, it is objectionable on account of the fact that it may be forced through the apical foramen ; therefore the foramen should first be securely closed with a small point of gutta-percha, or a small amount of thick chloro-percha, when it is impossible, on account of small canals, to use the warmed solid material. This, we think, is the best way to perform the operation, in the light of past experience among the most careful operators.

When gutta-percha is used for the entire filling, and the operation is commenced with chloro-percha, care must be taken that the solution is not too thin, because of the shrinkage upon evaporation of the chloroform. If difficulty is experienced in certainly getting the material to the apex, introduce first a shred of cotton moistened in chloroform alone, and the gutta-percha, quickly introduced, will then surely be conducted to the extreme point which has been moistened. Use the chloro-percha only as a starting procedure, and fill with solid points and pellets, pressing firmly in order that no considerable amount of chloro-percha will remain. After evaporation has proceeded, press again to insure solidity.

We hear much about the leakage of gutta-percha, but a root-filling inserted as we have described will not, we believe, leak, unless there has been enlargement at the apex so that a good closure is impossible. However, to avoid any possibility of risk, we incline to confine the use of gutta-percha to the immediate vicinity of the apex, then filling the canal with oxychloride of zinc as before described. By this method the canal is perfectly closed with an imperishable compatible material, and the result will show better success than can be obtained by any other method now known to dental surgery.—Editorial, *Western Dental Journal.*

A CHICKEN THAT WILL NOT DIE.

Great men with scholarly minds and dextrous hands have stood at the head of dentistry and, like the cloud by day and the pillar of fire by night, have guided it through the wilderness. But among the many causes which have aided it in its progress, there is one cause I believe to be the peer of any. And although firm in my convictions I hardly dare name this great cause, and it is with fear and trembling that I do so, for it is nothing more or less than amalgam. But I do hate a man who will not stand up for his friends. And when I have attended dental associations and have heard it called bad· names, have even heard it called murderer, I have gone home and hated myself that I would sit and hear one of my best friends so slandered and say no word in his defense, for I believed then as I do now, that amalgam was one of the chief causes for the rapid progress dentistry has made. It brought it within the reach of the masses.

They could not afford to have the large cavities in their molars filled with gold, but they could afford to have them filled with amalgam, and when they found their teeth were saved they believed in it. And, gentlemen, when you get the masses of this great country to believe in a certain thing, that thing has a future before it in spite of all else. Amalgam was a spring chicken in 1855, a sorrier lot never a chicken had. The hen who hatched it was ashamed to own it—and a very common barn-yard hen it was at that.

She forsook it as soon as it was hatched, and chickens that were hatched at the same time drove it from the roost, and big dentists hurled their fiercest darts at its defenseless head, and when they did not down it, they loaded, not only their shotguns and rifles, but also their cannon and blazed away at this poor chick. They hit it, of course—they made its feathers fly—but it would not die.

Disowned by its mother, kicked out of bed by its brother, it roosted outside in the dark, cold night, and the wind blew through its scanty plumage. But that chicken still lives, but is no longer a spring chicken ; his spurs are long and sharp, his tail feathers have all grown out again, and I believe *he*, with the aid of his brother chick, Vulcanite (who was hatched a few years later), has done as much for the progress of dentistry as any other one thing.

It reaches the masses, and it does dentisty as much good to reach them as it does the politician or the theologian, and their verdict is generally right. I believe in gold fillings and love to insert them, but when I hear great dentists say, as I heard one say before a convention of dentists a few months ago, that he never had had occasion to use amalgam, I feel sure he *has had* occasion to extract teeth amalgam would have saved. Who is thy friend ? He who stands by thee when all is well, or he, who, when trials come and direst need, is with thee still. He is thy friend who stays with thee till the bitterest end.

Gold is an aristocrat ; he is rich and powerful and is the dentist's friend as long as all is well and strong, and I believe in using gold for filling all teeth where cavities with strong, firm walls exist, and access to them is good, whether they are incisors or wisdom teeth.

But like all aristocrats, gold is dictatorial. He wants this, and does not want that. He wants strong walls, and does not want moisture. Give him what he asks and no metal can compare with him. But when teeth—bicuspids or molars—composed of chalky substance, with cavities of white decay, extensive and horrible, walls frail and brittle come to you to be saved—teeth indeed in which there is desperate need. Do not fill them with gold. He feels above such work as this. But choose rather amalgam, who will unobtrusively and in all meekness serve you then. Now I believe in amalgam, and when I hear man to-day endorsing highly the combination of amalgam with gold in different cases who a few years ago would have been ashamed to acknowledge the use of the former material, I am glad. And where I note that when they do use the two combined, they give to amalgam the difficult part to perform and place it near the cervix of the teeth, in difficult approximal cavities ; and that in these out of the way places amalgam performs its part faithfully although unseen, and sturdily holds aloft to the light of day its more gorgeous companion, I say it has won the fight, and I think it time for the great and learned dentists to desist getting off that speech : "I have never had occasion to use amalgam ;" and also its companion-piece, "any tooth that can be filled at all, can be filled with gold." These speeches were spring chickens once, and they learned to crow early, and crow loud, in season and out, but they are not chickens now ; they are very old chestnuts.—Cox, *Dental Review.*

WHEN NOT TO DO—A DIFFICULT PROBLEM.

It has been an axiom with me that one of the most diffcult problems to solve is not when to act, but when not to act ; not when to do it, but when not to do it. It seems easy for the young student to decide when to do it ; he can look into the mouth and see there is a great deal there to do ; he has learned just enough for that, but he has not learned when to let things alone, and not do it. The doctor cited in his paper various illustrations, and they are all pertinent to the subject. He refers to the treatment of irregularities, cutting out of fissues, the adaptation of artificial dentures, and the introduction of artificial vela. In regard to cutting out of fissues, there comes to my mind an instance that occurred in my practice. The patient is living to-day, and is over fifty years of age. He was not more than sixteen or eighteen years when he came into my hands. He visited my office with his father, who was particularly anxious about his child's teeth. The father saw a little black streak in a fissure in one of the boy's molar teeth, and he was very sure it was decay, and wanted it filled immediately. I examined it thoroughly, and said I did not think it needed it. "But, it is black," he said, "It is decayed, I am sure." I had considerable difficulty in persuading him to let it alone, telling him I would watch it, and fill it when I found it necessary. I have watched it for more than thirty years, and that fissure remains the same as it was at that time.

It would have been a safe wager that nine out of ten young college graduates would have cut out that fissure, and put in some metal filling; and I question whether the metal would have stayed in as long as the black mark has.

With regard to irregularities, I recall an incident that occurred when I was a teacher in a Sunday-school. Many years ago, one of the Sunday-school children was brought to my attention, a little lad of about seven years of age, whose lower incisor teeth were coming in irregularly, which is not an uncommon thing. His mother was very anxious about it, and wanted me to separate the teeth. I told her I did not think it was necessary; that, in my opinion, if the teeth were let alone, they would be nearly or quite straight by the time they were fully developed, and that I would see the child every Sunday, and would watch the case, and if the teeth needed any special care I would give it. In three weeks from that time I saw the boy with a regulating fixture in his mouth. He had been to some other dentist. The teeth became regular in time, but I do not think the appliance had anything to do with it. And my experience is, that in a very large per cent. of cases, if they do need help, it is at a later age than that.

There was reference made to the making of artificial plates, and the fitting of each part separately. I have practiced that all my professional life. I doubt whether in one case in 500 where I have adapted a plate with clasps, I have attempted to do it by the model. I do not think it can be fitted accurately by the model. Although the plate and clasps may be perfectly fitted to a model, they will not be so when put in the mouth. If you put the plate in separately, and put the clasps in separately, when each part is in position, they often find a little different place than what they had on the model; so if you put each piece in separately, and let the parts find their places easily and naturally, then take a little impression, showing their relation to one another, you will have, when it is completed, a plate that will be nicely adjusted, and will give little trouble.

With reference to artificial vela, I do not quite understand the kind of appliance the doctor referred to when he spoke about putting it in a little ways and then, after a while, putting it in a little further, and so on. It rather suggests to my mind the cutting off of a dog's tail an inch at a time, to save the trouble of cutting it all off at once ; because my experience is, that if the appliance is properly made, it can be adapted to its place entirely when completed, and that it may just as well be completed at once as to be partly made, and then continued at some other time. Yet, I have seen a great many appliances that I think probably it would have been better not to have attempted at all, or at least they should have been carried out less rapidly than they were.

There is much in the paper to commend, and some things that I am antagonistic to, and you all know that I cannot speak unless I have something to fight. The only thing I cannot find to fight in this matter, is the name of the essayist, and he has been Faught enough already.—Kingsley, *Achives of Dentistry.*

LOWER DENTURES.

"Size, fit and articulation" do not always hold a lower plate in place. when the jaws are in their normal condition, open. It is impossible, in some cases, to wear the lower plate wide on the labial side without the muscles, in certain movements, forcing the plate inward. I have found that weight on the lower jaw *is* an important factor.

I should suppose anyone taking an impression of a flat lower jaw, would use a flat cup.

I have for many years raised, or enlarged, the impression over the ridge, and made the plate no deeper on the inside than it could be worn.

You say, "have bicuspids *and molars* as long as incisors." No ! never. The ten anterior teeth should be on a line, and the molars shorter and inclined upward, posteriorly. This gives the curve of nature, and when the lower teeth are arranged to them, on placing the cutting edges on a flat surface, only the incisors and second molars will touch.

Always arrange the upper teeth first, as they give character to the mouth, mainly. Then arrange the lower to them, and trying in the mouth, make what changes may seem necessary ; and no set of teeth ought ever to be put into the mouth, finished, without first having been seen there in the wax, as no wax rim conveys a correct idea of how the teeth will look, and too much time cannot be spent in accomplishing this object.

Then again, *if* gum sections are used on the upper jaw, (which I never do), they are entirely out of place on the lower, if one wishes to secure the best results in articulation and artistic appearance.—HASKELL, *Archives of Dentistry.*

EXPOSED PULP ALROOD.

In caries of the third degree the pulp is exposed. It can be healthy or irritated, in a suppurating condition, destroyed in parts, or presenting some other pathological inflammatory state.

Conservative surgery must be applied in dental surgery as it is in general surgery, and will give equally good results. Lister's antiseptic and occlusive dressing should be used in our specialty. For the past seven years he [Redard] had used no other method, and is much pleased with the results obtained. Arsenic and nerve-broaches have been banished from his office, so far as extirpation of nerves is concerned. He saves all pulps and portions of pulps, starting with the principle that the pulp is the nourishing organ of the tooth, and that without it the dental periosteum becomes most easily inflamed.

When caries of the third degree is met with, he first removes all the dentine with a proper excavator, taking care not to wound the pulp, then washes the cavity antiseptically, using ordinarily a $\frac{1}{1000}$ sublimated solution, to which $\frac{1}{500}$ resorcin is added ; this thorough washing out being finished, he makes a perfectly tight dressing, especially against the walls. The dressing is made with absorbent cotton, and the following resinous antiseptic tincture is applied :

Corrosive sublimate, .02 centigramme ;
Ext. of opium, 50 centigrammes ;
Chloroform, 1 gramme ;
Resorcin, 1 gramme :
Tinct. of benzoinum, very thick, 3 grammes.

Tincture of benzoin, when brought in contract with the saliva, precipitates in the meshes of the cotton and forms in that manner a perfect obturation for at least twenty-four or forty-eight hours. Whenever the dressing is renewed the parts must be washed with the bichloride solution.

After ten days, when all pain or odor have disappeared, he resorts to a temporary filling, which is left in place for a week at least. For this filling he proceeds as follows: A small pellet of cotton, iodoformed, is used as a cap to the pulp; he then makes one occlusion with a dressing containing sandarac varnish, being very careful that the borders of the cavity be well packed. If no accident occurs he removes the first part of the filling, leaving the iodoform cap on the pulp; he then places on it semi-fluid cement substance, and when this is somewhat hardened he finishes the cavity with the same preparation.

The author has had the opportunity to watch the results of his system in several instances, and has always found the pulp alive.

In regard to dead teeth or caries of the fourth degree, the antiseptic treatment will succeed only if the teeth have not had any periostitis, or if no necrosis of the apex of the root be present. Cleaning out of the canals the author does not think absolutely necessary; but if this is done, the roots are to be enlarged with nerve-drills, and care is to be taken that no decomposed matter be pushed through the apex. The some antiseptics are used as in caries of the third degree,—namely, bichloride of mercury and iodoform.

The conclusions formulated by the author are, that—

1. All pulp or portion of pulp must be saved.
2. Arsenic must not be used except in very rare cases.
3. The nerve-broach must never be used for extirpating a pulp.
4. A well-understood antiseptic method is the base of the treatment of caries of the third and fourth degrees.
5. After a certain length of time, capped teeth can be permanently filled with a metal.
6. By the antiseptic treatment, cleansing of the canals of the tooth is not at all necessary.—*Dental Cosmos.*

DENTAL COOKERY.

Let us consider some of the varieties of food we have: The rubber plate or common bread, is indeed the food of the "rank and file," the rich and poor alike partake of it—the great necessity that we must have. Bread will always be a common article of food. Artificial teeth, in spite of our skilled operators, will ever be as long as there are mouths. They are so common, so simple and easy to make, and yet how seldom we find them good ; how often are they *dark* (between the joints), ***heavy*** and ***stale.***

> **Good bread is a blessing from God, and the baker,**
> **A good rubber plate is alone from the maker.**

The pastry cook and the skilled operator often consider it a disgrace to have to make bread and rubber plates. How often are they left for the baker, and "Cheap Johns," or the "plate factories."

Why is it some of our most expensive operators inflict upon their confiding patients artificial teeth that are an outrage upon them, and a disgrace to the dental profession ?

The baker kneads his bread, and we need better rubber plates. Any dental society should regard it as time well spent in considering and trying to improve this article of food.

Gold, continous gum and ether plates are good, even better in many respects than rubber, but they are like fine rolls—not as common, they cost more, and do not meet the wants of the people.

Plastic fillings, or beefsteak, are common, and within the reach of all ; some are good and some are tough. Time will also be well spent in trying to make them better.

Gold fillings are like the finer cuts, and choicer meats ; they are superior, and we have them in many forms, according to our need and taste.

Gold crowns are like the school boys definition for salt, "that which spoils my potato when there is none on it."

Salt and crowns both have saving qualities that are rarely equaled; crowns are a reward of *de*merit rather than of merit, for through the negligence of the patient or the unsuccessful attempts of the dentist to arrest the ravages of decay, the old roots can still be saved and wear crowns that may be the envy of many an old Amalgam Plug.

Bacteria is simply hash ; it is to the Dental Society what the latter is to the boarding house ; there is a mystery about both. There has been such diversity of opinion as to the kingdom they belong, the animal or vegetable, I would say that they are a mixture of both. —CRUTTENDEN, *Dental Review.*

"WHERE'S MY SLIPPAH."

Mundé says that to the imprudent act of getting out of bed without protecting the feet—one so commonly committed by woman without thought of the consequences—may be traced many an attack of cellulitis, brought on by the sudden though momentary exposure of the feet to cold. It has caused more diseases to women, previously healthy, than could result from any other single act of imprudence.—*Lancet-Clinic.*

MODELLING COMPOSITION FOR IMPRESSIONS.

Having noticed several articles recently in regard to taking impressions with modelling composition, I wish to give a few ideas; my own experience of about eight years with it.

We all know plaster to be the favorite material with most dentists for taking impressions; and I believe the reason why they prefer plaster is that they have never thoroughly tried modelling compound, and especially for partial plates. We hear men say they cannot get perfect impressions for partial sets with anything but plaster, because plastic materials are drawn out of form by the teeth when removing the impression from the mouth. Suppose the impression is taken in plaster, and by gathering up the pieces and fitting them in place you get a perfect impression of the parts; then, suppose you make a plate to perfectly fit that model; can you get that plate in the mouth without trimming it? No; neither will it fit better when you do get it in, than if you had taken the impression in wax at first, and slightly trimmed the model where the wax had dragged, for the points that do the dragging will prevent any plate from going into the mouth, that is made from a perfect impression; hence, I have always considered the great stress laid on the securing of a perfect impression for partial sets of teeth, by the "all plaster cranks," as one of the biggest pieces of "tomfoolery" ever advanced by the profession; and yet I do not remember of ever having seen an article published, denying the superiority of plaster over anything else.

I will make some broad assertions, all of which I am ready to defend whenever contradicted.

My first assertion is that modelling compound is better than plaster for all kinds of impressions, because: first, it is less disagreeable to the patient; in the next place, for full sets, I can get as accurate an impression as can be made with plaster, a much smoother model than can possibly be made from plaster, in much less time, with less trouble; and for partial sets, I can construct a plate from the model taken from the compound impression, that will fit as accurately when placed in the mouth, as can be made from an impression taken with any other material.

Why subject yourself and your patient to the inconvenience and trouble of the plaster, when the compound will answer every purpose better? I will give my method of using it, and ask all who have not done so, to try it as I have done, and report results:

There are several grades of the compound; keep about two, and by mixing use it just as stiff as can pe introduced in the mouth, without burning. Use impression cup larger than for plaster, and a superabundance of the compound; press it up slowly, and keep the lips and soft parts out of the way, until it is thoroughly adjusted all around; previous to inserting, put a Horton's rubber bib on; use ice-water with the syringe until perfectly hard, before removing. I believe we can secure a better impression in this way than can be taken with any other material now in use.—STAPLES, *Achives of Dentistry.*

IS THE SIX YEAR MOLAR LESS PERFECT THAN THE OTHER TEETH? IF SO, IN WHAT RESPECT, AND WHY?

Perfection refers to form and to structnre. As to form, less imperfection can be found in the first molar than in any other tooth both as regards size and outline, being the largest tooth in the series, and as closely as any other conforming to its typical outline.

As regards structure, even our brief experience has shown us a marked inferiority to the other teeth in its power to resist disease. About two-thirds of all the teeth extracted in this college (U. of M. Dental Department) this year have been the six year molar. Dr. Taft places the proportion of decayed first molar at 37 per cent. of all decayed teeth. Analyzing tables given by Drs. Tomes, Hitchcock, and Magitot comprising about 35,000 cases of caries, find that we considerably over 25 per cent. of all decayed teeth are the six year molars.

In looking for the cause of this defective structure the first thing noticed influencing this tooth is its early eruption.

The body of a child is not the minature of an adult organism, but is characterized by peculiarities of structure and function. All its organs are incompletely developed but not uniformly so. The brain is, proportionately to size and weight, larger than in the adult, imperfect in structure and of softer consistency. The tissues generally are softer, more vascular, and more distended with fluids. The skeleton is, for the most part, cartilaginous. the muscles gelatinous, the cellular tissues are filled with serum, the skin vascular and sensitive. All the tissues at this period are in a formative condition, lacking strength and solidity, and characterized by the defects noticed in the first permanent tooth.

Deficient nutrition is that condition in which the quantity is inadequate to supply the natural demands of growth, the quality being normal. The result is a structure different in form or strength, but which, so far as is formed is of healthy appearance.

The cause of this deficiency, as far as the six year molar is concerned, is not that a less amount of nutrient material is in the system, rapidly formed and deposited ; for the voracious appetite and vigorous digestion of the average six year old child would successfully dispute this, but that there is a demand made by every tissue in the young body for more than its share of nourishment, and the first molar becomes more and more incapable of receiving its supply, and once formed must take its chances much as it is, while the other tissues are developing powers of resistance and the means of reparation of injury.

Not only are all the tissues demanding nourishment, but especially its neighbors on either side are being developed and require supply which is had only at the expense of the first molar.

Anatomically considered no other portion of the human organization offers such a complex association of tissues as those of the mouth, no other has such diversified functions, and from a pathological standpoint no such significant systemic relations, and at the period at which the six year molar is developed the jaws are crowded with teeth, both of the temporary series and the partly grown permanent set ; vital activity and irritability is at its maximum and the system generally, and mouth especially, susceptible of injury and disease. After its eruption it is surrounded by tissues irritated by the pressure of the teeth below, the gums easily irritated and inflamed, the temporary teeth being absorbed at their roots are becoming less firm in their attachment, and in every act of mastication aggravating the trouble, so that the tendency is to avoid using them depriving the new teeth of the exercise needed to strengthen and develop them.

Again, the tooth coming so early is popularly supposed to belong to the temporary set and its condition ignored till pain causes a visit to the dentist who relieves the patient of both pain and tooth. This cause of defect in this tooth is more important than it at first appears. Were it confined to a few it would be immaterial, but continued through generations, as it is, and multiplied by inherited tendency, any organ will succumb to such usage.

The treatment received by the teeth of a six year old child will account for much of their trouble. He does those things which he ought not to do and leaves undone those things which he ought to do. He will eat any thing that is sweet, and chew any thing he can call gum, but will not brush his teeth, nor as formerly, will he allow his nurse or mother to do it for him.—MERRIMAN, *Dental Register*.

OF COURSE NOT.

A recent writer says that the view that brain workers should go supperless to bed is not good advice. Most medical authorities of the day think it wrong. It is a fruitful source of insomnia and neurastheny. The brain becomes exhausted by its evening work and demands rest and refreshment of its wasted tissues, not by indigestible salids and "fried abominations," but by some nutritious, easily digested and assimilated articles. A bowl of stale bread and milk, or rice, or some other farinaceous food, with milk or hot soup, would be more to the purpose. Any of these would insure a sound night's sleep, from which a man would awaken refreshed.—*Exchange*.

"Eat before you sleep ; sweat before you eat."

ADENOID GROWTHS IN ORAL DEFORMATION.

Dr. C. A Brackett.—This subject, which Dr. Niles has brought before us to-day, I have been led to give some attention to, through a previous effort of dentistry in another place. It has seemed to me a matter of very considerable consequence. My own idea about it —and I make no pretence as to correctness—is that the varying of the upper arch at the sides and the bulging up of the hard palate is in consequence of the deviation of the muscles, through keeping the mouth open. It seems to me, with the very limited attention given to the subject, that I should endeavor to stop this difficulty. As, for instance, in case of a child breathing with difficulty or noisily, especially at night. In some of these cases that have been operated on he makes mention of very great alarm being excited because the child slept with perfect quietness after the operation. The child was a noisy sleeper, and immediately upon removal of these growths the breathing became so quiet that there was anxiety on the part of the parents, thinking it of some grave consequence. Dr. Hooper says he removes many of these growths with his finger-nail. I think that a dentist is as capable as any person to make the examination. If a case came to me, I should feel justified in making the examination, and under the influence of nitrous oxide, if the age of the patient made it advisable. I cannot see any harm in making the examination. If I did not feel like doing that, I should refer the patient to some one who had had practical experience with the treatment of this affection.

Dr. Maxfield.—Since reading the paper of Dr. Hooper, referred to by Dr. Niles, which I first saw a few months ago, I have been very much interested in this subject. One thing that Dr. Niles did not mention was that Dr. Hooper says that it was in 1885 that he first removed these growths, and thinks he was the first one to perform this operation in New England. I refer to this because it shows that there is not much known about this affection in the medical profession. A few weeks ago a child was brought to me by her parents to have its teeth straightened. As the child had many of the characteristics that Dr. Hooper attributes to this affection, I adviced the parents to have a specialist make an examination of the throat and nose. They did so, and reported that the examination had been a very thorough one, and that nothing of the nature I had alluded to had been discovered, and that the specialist attributed the mouth-breathing to catarrh. I asked how the examination had been made, and they answered, by passing an instrument into the front of the nose. While this examination satisfied the parents, it was far from being satisfactory to me.

Dr. L. D. Shepard.—I have seen a considerable number of the patients that have been spoken of, and quite a number of my patients have been operated upon by Dr. Hooper. I have no question, from what little thought I have given to the subject, that the collapse of the upper jaw is caused or helped by this growth. I have not given any special study to this subject in a proper scientific manner, but almost all the patients with whom I have been familiar, that had this trouble, have always had accompanying it the peculiar conditions of the mouth already spoken of. The essayist did not speak of what has always seemed to me a very interesting circumstance connected with the operation which we have the impression of as being original with Dr. Hooper. You well know, in all bloody operations in the mouth, the difficulty occasioned by the blood passing down the throat into the œsophagus. Dr. Hooper in these operations places the patient prone upon the face, so that the blood comes out of the mouth. All patients, young or old, when etherized, are placed upon the table, face down, head hanging over, and the operation performed by sense of touch ; there is no trouble from blood as it drips out into a basin. This has solved with him the whole difficulty of giving ether with a bloody operation in the mouth. I think this subject a very interesting one, and am glad it has been brought before this meeting. The evidence of this condition is most marked in the patient, and you can recognize the patient the moment you put eyes upon her or him. I have in that way noticed several of my patients, and have sent them to Dr. Hooper, and my diagnosis has been confirmed by him. We all know that mouth-breathing and irregularities of the teeth go together, and we have both in this disease. It is of so recent discovery, it has escaped notice until now. Another feature, and a very prominent fact, in regard to this subject is, it is a self-limited disease. As a rule, it is a disease of youth and not of adult age ; my impression is it is very rare to find such a case in an adult.

Dr. Wm. H. Atkinson.—It is useless for me to improvise and talk of principles and facts that we have not been made acquainted with. There is knowledge on this subject which acts without saying. Most of the remarks that have been made are simply surmises. The man who handles the mouth must and will be an expert at it. As to the cause of this trouble we know absolutely nothing. We know indications, and yet every indication, as noted, we do not know, for we cannot pursue it beyond the reach of mental grasp. These pathological growths cannot be because of food formation, but must be from the need of nutrition of the part ; they are evidently hard and epithelial-like ; the myxomatous matter of the gum is here involved outside of its immediate condition. There is need of considerably enlarged vessels here, and until these vessels have been enlarged the growths continue. We know so little of it that I only care to emphasize our ignorance, and call for a ratiocination of our voice and mind until, with the inspiration of the moment to guide us, we can retain what we know ; until then it will be useless to talk about it. One remarkable case I wish to speak of, where I have made fourteen or fifteen operations to remove the abnormal growths which filled the entire buccal cavity and covered the cheek in folds like the pouches of a chipmunk. If I ever get my saddle-legs on, I will write this case up ; it is of too much importance and interest to let go. It was entirely of epithelial growth. I applied a solution of salicylic acid in alchol, and just cooked the abnormal growth, and was thus enable to remove it. It had not involved the blood tracts. My place is so much in the possession of my dental friends that I am not always able to put my hands on the specimens I wish to, so was unable to bring them with me. We have not enough to indicate what this pathological growth is. What this term adenoid means we do not know. It is in this mixture of terms where we shall get into difficulty, and if we are not careful we shall get into greater difficulties from them. We shall be pushed from one supposition to another, until at last we hope to take such a grip that it will be understood by all.

Dr. Shepard.—I think the essayist gave the definition of adenoid, and with sufficient emphasis for all to recognize it. It is a mere name and means gland-like, which, however, does not fully describe it.

Dr. Atkinson.—It is a pouch in contact with the tissue, is lined with epithelial cells, and depends upon them for activity.

Dr. Niles.—As I understand it, this adenoid growth belongs to the glandular growths of the throat, and they are located in the region of the pharynx. They are simply a hypertrophy of the cells of the pharynx. Dr. Hooper says the old fashioned polypus is not the same as the adenoid growth ; but, of course, a man who has a specialty of this kind is liable to go to extremes, the same as in other specialties. A young man of my acquaintance says his grandfather died of polypus. This young man goes about with his mouth open, and respiration would be entirely shut out if it were not for the mouth. His parents are very much prejudiced against having anything done. Another case : a gentleman from Chicago came on to me with his two boys to have their teeth straightened. These boys have these adenoid growths, and their father intended to have an operation performed. I succeeded in getting a very good arch, but their parents then refused to have anything done. I was well convinced that nothing permanent would result till this operation was performed. Dr. Young treated them with escharotics. Most of the information we have is mainly from Dr. Hooper, though Dr. Bradbury has made some study of the trouble, and one of the specimens that are being passed around was taken from the mouth of one of Dr. Bradbury's children. I myself have four children which I am going to have examined very soon. I believe they have this growth ; they all show indications of it, having the hacking cough. The youngest is about one year old.—*International Dental Journal.*

"I am," says Dr. C. C. Carroll, "taking impressions of perfect sets of teeth, when I meet with them, for the purpose of getting the peculiar types which I conceive to be shown in the mouths of those persons ; I desire to produce new forms of artificial teeth more in accordance with nature than those now in the market. I remarked to a lady: 'Here are shown three distant types: your parentage, as shown from the cuspids forward, is distinctly English; from the cuspids to the molars, including the cuspids and bicuspids, it is French; and from there back, you are German.' She remarked, 'Who told you?' I said, 'This tells me;' referring to the model. She acknowledged that the nationalities I had named were represented in her ancestry.'"

RAPID METHOD OF INSERTING AND FINISHING CONTOUR FILLINGS WITHOUT THE AID OF A MATRIX.

For years, science and skill have been coming to that place where each and every department of life is being forced to that point where its work may be accomplished with the greatest ease and in the shortest time. The department which we represent has been among the foremost in devising ways and means for the accomplishment of our daily work with the least inconvenience both to ourselves and our patients. It shall be the aim of this paper to present you, in a few words, a few (possibly new) ideas, and thereby assist you in the labors of the day, and the rapid and satisfactory completion of those large or difficult contour fiillings with which we have to deal.

By the use of Dr. Jack's and other matrices very many of the difficult operations in contour filling have become, under the skillful hand, very skillful operations; and operations once requiring hours for their completion are now accomplished in minutes.

The impossibility of having the walls of a cavity in full view, and the inconvenience of easily adjusting a matrix, led me to discard all forms of matrices, and look about for a method of quickly reaching the same or a better result. After some years of experimenting with methods, foils, and preparation of cavities, I am pleased to present you a method which you will find to answer the requirements of the case, thereby making operations, formerly long and difficult, so short that they become a pleasure both to the patient and the operator.

First, space by a separator or tape, to the width of a No. 3 or 4 separarating file. Apply the dam in the usual or the following manner: In the case of a right superior second bicuspid, lay the dam over the face, and apply it to the mouth in the position it is to occupy, then with a pencil mark the centre of each tooth from the right superior lateral to and over the first molar. Punch out a hole for each tooth, and then apply the dam, beginning at the lateral and working backwards. Over the molar slip a clamp, or, if close to the second molar, pass a ligature up between, and leave it. Then, with a thin and flat burnisher, turn the dam up on itself around each tooth, and dry with cotton.

The dam applied in this manner obviates the tying of a ligature about each tooth, which is a nerve trying experience. This method allows greater freedom for working, because the dam is out of the way, and also affords better light. It will be found to answer the purpose for large cervical cavities when properly applied.

Next, prepare the cavity as usual, except do not cut any retaining points, but in their place cut a fine groove across the cervical wall and down the buccal and palatal or lingual walls with a fine burr, and make the opening on the crown surface when possible, slightly dovetailing towards the body of the tooth; then, with a sand-paper disk, smooth the mesial or distal surface, as the case may be.

The gold to be used becomes the next feature, and must be a soft gold, easily moulded under a burnisher. I use the new gold of the Boston Dental Manufacturing Company, ropes No. ½. These may be flattened and made into cylinders with great convenience.

In using soft foil, take No. 4 soft, cut in one-half sheets, and roll to about the size of three-sixteenths of an inch diameter, and flatten. Each cylinder to be of a length slightly exceeding the depth of the cavity from front to back, and its size in the square to depend upon the width of the cavity and the method of condensation.

I prefer the No. ½ ropes to any other, for the ease with which cyclinders may be made from it. For the intermediate layers, of which I will explain later, the Boston Dental Manufacturing Company's No. 4 foil is the form used.

In preparing the cylinders, take a strip full length of soft gold, grasp it with a pair of pliers, and fold over and over until the size wanted is rolled; then condense easily endways, then sideways, and repeat until it is of the desired square.

Never cut a strip in two lengthways to get a short cylinder, but rather fold it upon itself lengthways, and proceed to roll as in the usual manner. With many of these cylinders of various sizes rolled during leisure-hours, or by the assistant, considerable time may be saved at the moment of greatest strain to yourself and patient.

Now place a floor of these squared cylinders across the bottom of the cavity, allowing the ends to extend slightly over the edge, and with a large round or foot-shaped plugger partially condense this layer ; then, with a couple of pieces of No. 4 foil made cohesive and *single thickness*, placed over the partially condensed surface, the whole is thoroughly condensed with a smaller, rounder plug care being taken not to allow the plugger to enter the gold extending over the edge.

When thoroughly condensed, pass a thin, flat burnisher up by the ends, and, with a slight pressure, force them over the edges of the cavity in each direction, making the burnishing carry the gold over the edges, thereby locking it and preventing tearing it out. Increase the pressure upon the burnisher until the ends are well condensed, and shaped to the desired contour.

When this point is reach, place a couple of thin layers of cohesive gold over the whole, and condense well. This is done for the purpose of locking each layer and giving edge-strength to the contour. Burnish this edge well, and then proceed with your second layer of soft cylinders, as you have done with your first, with the exception that the middle cylinders are to be slightly longer than the side ones, to allow for the swell of the contour. Burnish, and proceed as before.

The crown surface can be finished by building up to the desired shape with cohensive gold, which can always be made to unite with the soft gold, if the first union is made with pieces of a single thickness, well united by mechanical force, and condensed with the soft gold.

Contour fillings, built in this manner, do not meet any finishing with a file or sand-paper, as the whole surface is left finished at each stage, and any amount of overlapping gold is burnished off, leaving a clean, smooth edge, and highly polished.

By this method the entire wall edge is constantly in view, and one point is not left for another until the former has been completely *filled* and finished, which alone is enough to commend this method to our careful consideration.—WAITT, *International Dental Journal.*

I do not know that I can say anything except that it is about time for the dental profession to adopt some correct method of filling roots of teeth which will not subject us to humiliation and ridicule by all scientific authorities when they come across the various methods, correct and otherwise, that are practiced by dentists. One of the reasons why there is a lack of harmony between physicians and dentists is because dentists themselves are so faulty in their manipulation, they are so inadequately prepared for the practice of dentistry, and they so little use their faculties of thinking or doing that they bring the blush of shame to the cheek of every honest dentist who tries to do the proper thing. I tell you, gentlemen, what we want is a proper appreciation of professional dignity and action. First prepare yourselves to be respected, then learn to respect yourselves, and you do not need to plead for recognition.—*Harlan.*

COMMON SALT AS A DISSOCIATIVE.

The statement credited to Mr. Fteley by the late Professor Nichols, that common salt added to water having a given vegetable taste develops therein at times a decidedly oily flavor, suggests a few observations pertinent to the discussion.

The dissociative effect of common salt is seen in the readiness with which the oily matter of the skin, also its superficial epithelial cells, are removed in the bath ; in the separation from the teeth and neighboring soft parts of salivary and mucous deposits and particles of food, thereby rendering the oral secretions miscible in water ; in the separation of the globules of milk and the disks of blood ; in the loosening up from each other of the fibers of such tough animal tissues as the cornea, sclerotica, tendons, fasciæ ; in the disintegration of masses of vegetable matter floating in water ; in effecting the discharge of the contents of decayed, broken or otherwise ruptured vegetable cells, as in the algæ.

This dissociative effect, studied microscopically, seems to be due to the induced shrinkage of the cells and fibrous components of the mass, whether animal or vegetable.

This shrinkage is toward a common center, the contour making a closer approach to modifications of the sphere than normal. Angular bodies lose their angularity, and bodies that are oblong shorten and thicken, as may be especially remarked in the oblong-celled algæ. In assuming the forms in question, the cells, fibers and filaments are torn asunder, and part permanently with their inherent tendency to aggregation.

With this dissociation we have large increase of surface upon which oxidizing and other reducing agents act to such a degree that there is marked intensification of taste or odor, or both, where before they were hardly or not at all perceptible. Briefly, the intensity of the taste or odor, or both, of masses of animal or vegetable matter is directly as the surface exposed to the reducing agent.

In the case in question, assuming the oily flavor to have had its origin in the oily matter found in the cells of certain algæ (*Vaucheria*, for example), the application of a solution of sodium chloride would disintegrate the masses, dissociate its elements, thus liberating the oily matter that had escaped from cells mechanically ruptured, or whose investment had been destroyed by decay, causing the cells to empty themselves of their contents into the surrounding medium.

This is easily demonstrated microscopically. In the case of *Vaucheria*, the oil globules may be observed in the cells and between the filaments, and on the addition of sodium chloride they are seen to escape from beneath the filaments and through the holes and fissures of the cells, suggesting an interchange between the medium in which the mass is floating and the denser contents of the cells, its oily and granular matter participating in and indicating the direction of the current.—LINE, *Journal of American Society of Civil Engineers.*

NOTE.—Soon after the occasion of the above remarks, the writer was favored with a further observation of the means by which the contents of vegetable cells are set free.

A glass of water containing a few filaments of *Vaucheria* had been placed in a window, and from time to time fresh water added to favor the growth of the plant and compensate for loss by evaporation. On one occasion, while examing a filament that had been transferred with a few drops of water to a live slide, numbers of the more common rotifers were seen puncturing, tearing, and otherwise breaking up the cell-walls through which the cell-contents poured into the surrounding medium. The vigor of the assaults, the total destruction of the cells composing the filaments, and the speed with which the work was done, suggest a factor too potent to be overlooked in a discussion of water contamination by natural means.

A CRY FROM MACEDONIA.

If the users of wood points for root-filling could only have their clients return to them to have the absesses treated we would not be the walking skeleton we are at present. Abscesses do not heal spontaneously after a root has been filled with wood. The wood must be removed, and what a task it is, especially when it is cut off short. Would that you would not use wood, and there wouldn't be so much good wood spoiled. Selah !—*Dental Review.*

If the experiments are true, and if they tell the truth, it is fallacious to wipe out a cavity in a living tooth with an escharotic. I say it is fallacious to do it. An instance was related by Dr. Noyes, based upon the experiments of Dr. Miller, to prove the fallacy of that. Some people may not estimate it at its true value. They may fail to see what is meant to be conveyed. They may have a very inadequate idea of what it is to try to do the correct thing in practice, and nothing will convince them except they have their own hands, fingers, face, or any other soft tissue burnt. To dispose of escharotics as they relate to this subject, I will say, and I have said it over and over again, and I will say it as long as I practice dentistry until somebody can prove to the contrary, that all substances that coagulate albumen are hindrances to diffusion and are self-limiting in action, and that they are only useful in those cases where diffusion is not needed. I feel so confident of this that no one has ever up to this time had the temerity, or had the patience to go to work and perform a series of experiments that would prove the untruthfulness of this statement. That is all I have to say about that.—*Harlan.*

"Narrow strips of corset steel may be made into breeches. The temper is good and the steel is tough."—*Dental Review.*

MENTHOL IN ACUTE RHEINITIS, AND OTHER AFFECTIONS OF THE THROAT AND NOSE.

1. It stimulates to contraction the capillary blood-vessels of the passages of the nose and throat, always dilated in the early stages of head cold and of influenza.

2. It arrests sneezing and rhinal flow.

3. It relieves, and indeed dissipates, pain and fullness of the head by its ahalgesic properties, so well known by its action when applied externally to the brow in cases of *tic douloureux.*

4. It is powerfully germicide and antiseptic. It thus kills the microbe of infection, and prevents dissemination.

The remedy may be employed by means of a general impregnation of its vapor through a room or house, or locally to the nostrils and air passages ; for both which purposes there are several methods.

1. A 10 to 20 per cent. solution of menthol in almond oil, in liquid vaesline, or in one of the many other odorless paraffin compounds, can be sprayed into the nose or throat, or about a room.

2. By placing twenty or thirty grains in an apparatus specially designed by Rosenberg for administering the drug in cases of laryngeal consumption by inhalation, in the form of vapor mingled with steam.

3. By placing a similar amount or one or two drachms of the oily solution in a Lee's steam draft inhaler, or bronchitis kettle.

4. By placing a saucer of water containing a similar quantity of the crystals over a gas burner in the hall, by means of which the whole house is kept constantly permeated with the drug.

5. But by far the most convenient method for personal use is to carry always the ingenious pocket menthol inhaler known as Cushman's, which should be used not only on the first approach of an attack, but three or four times a day during an epidemic, and always in cold-catching weather by those subject to head colds.

The instrument consists of a glass cylinder four inches in length, half an inch in diameter, and open at both ends. The tube contains crystals of menthol closely packed and prevented from escape by perforated zinc and cork. The opening at one end is twice the size of the other, the larger being intended for inhalation by the mouth, the smaller for the nostril. It is not to be simply smelt, but well sniffed or inhaled, so as to cause some tingling or smarting, a sensation which is quickly followed by that of coolness and openness of the previously " stuffed " and heated nostril.—Brown, *Medical Press and Circular.*

When filling the upper ring of a flask—in repairing vulcanite work, it will generally be found that a large airhole is frequently formed in the plaster just poured in. This is caused by the plaster in the lower ring being dry, and the air escaping from it forms the airhole. To avoid this, after the case is invested in the lower part of the flask, trimmed, bevelled and varnished ready for the investment of the upper ring, grease the whole surface and place it in a bowl of water while you mix the plaster for the upper ring. By this manipulation you will avoid what at times is very tantalizing in repair cases. The same procedure may be observed for new as well as repair cases.—Ceupein, *Dental Office and Laboratory.*

AMERICAN WANT-OF SYSTEM OF DENTISTRY.

I have taken the *Dental Cosmos* as are presentative journal, and made a careful examination of fifteen years, from 1874 to 1888, inclusive, for certain information. I have enumerated and tabulated all who advocate methods in certain directions by original paper, or by voice in meeting, even though the voice only said, " Those are my sentiments ; " and to establish a basis of comparison for study I have assumed that it seems reasonable to infer that workers desire the widest promulgation of their convictions.

Such then being the oracle, let us ask that we may receive.

How gladly does the profession seem to rush to it and press for an answer to their heart's idol. The one query they have hugged to their breast from time immemorial. "Tell us, tell us," they cry, "what is the accepted practice of the profession in root-filling?" The answer which the records give is, that during these years, through the medium of original contribution and reported dental discussion, eight substances have been mentioned, viz: Lead, wood, shellac, oxyphosphate of zinc, oxychloride of zinc, gutta-percha, gold, and cotton variously medicated. The number of advocates for each is: Oxychloride of zinc, twenty-one; gold and gutta-percha, each sixteen; cotton, variously medicated, eleven; wood, six; cotton, medicated with creasote, four; oxyphosphate of zinc, three; shellac, one; lead, one; unfilled, one. In all, eighty who advocate anything; and upon the basis of comparison, they must be a just proportionate representation of the profession, for he who advocates is a college of practice.

This being the case, no substance has a majority, nor even a third, of the profession has answered itself,—that there is no accepted method of practice in root-filling.

The next query is, "Does the profession enlarge root-canals?" The testimony from the same source shows that there are seven advocates in favor of, and five against it. It is therefore accepted practice to enlarge canals by reason of this seven-twelfths of the profession favoring it; and this raises the question, "Is the minority generally in the right?"

The next problem that seeks solution is, "What is accepted practice in pulp-capping?" We find that the operation is divided into the medicament first applied, the cap, and the probationary filling. The advocates under each division are as follows:

Medicament—creasote, thirteen; carbolic acid, eight; oil of cloves, two; balsam of fir in chloroform, two.

Cap—oxide of zinc, with medicament other than chloride of zinc, fifteen; paper, six; gold-beaters' skin, two; lacto-phosphate of lime, one.

Probationary filling—oxychloride or oxyphosphate of zinc, twenty-eight; Hill's stopping or gutta-percha, six.

The accepted practice is, therefore,—medicament, creasote; cap, oxide of zinc with medicament other than chloride; probationary filling, oxychloride of zinc or similar cement preparations.

I have chosen to work out and bring to you these queries in illustration of the points advocated by my paper, for certainly there are no queries like them. They have been ever before the profession, and are subjects upon which has been presented the most testimony. There are many, many others.

I have another query of different nature, but perhaps of no less interest :

Is dentistry a specialty in medicine ? The answer, according to the *methods of practice*, is that the number of subjects discussed by the profession in its typal journal during a period of sixteen years was two hundred and fifteen, of which thirty-nine related to materials and drugs, and thirty-eight to pathology and therapeutics, making a total of seventy-seven in all. In other words, only one-third of the whole number had any relation to medicine. By exclusion, therefore, the rest of its ideas must have been truly dental.

The most marvelous thing, however, revealed by the analysis of the past seven years is the fact that the profession, as represented by its writers, has devoted the greater proportion of its powers to the study, development, and consideration of crown and bridge-work. This has had prominence and preferment above every other subject. The discovery of this fact gave your essayist much food for meditation, as it probably will many of you, for it was difficult to ascertain where, in the practice or even in the theory of medicine, such mechanical subjects found their place. The conclusion, therefore, is that dentistry as revealed by its literature, the representative thought of the profession, is not a specialty in medicine.

The answers to these various questions, gentlemen, have of course only an indicative value, but I would suggest that it might not be without profit to the profession if this society, or another of equal prominence, would arrange witn the local societies all over the country, so that all should meet once or twice each winter in their respective places on the same evening, or on an evening in the same month, for the purpose of discussing the same subject ; to the end that each society ascertain by such discussion how many advocates among its membership any method of practice may have, and report the same to the association controlling the movement. The published report of this central association would exhibit from time to time the status of any method, and indicate the accepted method of practice of the profession in any given operation.

In conclusion, gentlemen, I would like to accentuate if possible this suggestion, for I believe it to be the only method by which an absolute " record of *practice*," and " not of theories," can be obtained. Committees on practice operating, as that appointed by one of your neighboring societies, cannot reach the desired result ; for you have had your attention called to-night by my *statistics* to the fact that but few in the profession have placed their individual methods of practice before it. The *opinions*, therefore, of a committee composed of a limited number of men expressed upon the practice of this advocating few, falls short of being a true representation of the methods of practice of the profession. In this era of progress the profession should obtain its own full voice.—FAUGHT, *Dental Cosmos.*

AN INTERNATIONAL DENTAL CONGRESS.

It would seem from some intimations that have found their way to the surface, that there is a desire, on the part of some, at least, to have an International Dental Congress during the year 1892, the year it is now proposed to hold the grandest International Exposition that the world has ever seen. But as neither the time, place, nor absolute certainty of the occurrence of the latter has been settled, it might be well to wait a little before taking any active measures ; the fact of holding some sort of a dental convocation during the year of 1892, if the International Exposition should be held, has doubtless been in the minds of many, but nothing as yet can be definitely settled upon in reference to the matter.

The New Jersey State Dental Society at its last meeting, took up the matter (the first to do so, so far as we know), and passed a resolution, and extended an invitation to other dental Societies throughout the United States. Now, this was a very easy thing to do, but was it the best thing? Certainly no State Dental Society can assume to be the representative body of the profession of the United States; there are more than thirty other Societies in the country that in this respect stand on a level with the New Jersey State Society, at least it is presumed so ; and it is doubtful whether a dozen of them would or could respond to such a call as this, and with anything like such a representation of the profession it would be unwise to take any definite action. There are two organizations in the country that far more fully represent the profession, than it is possible for any State Society to, viz : The American and the Southern, and there are two others, that in one sense are above any State Society, viz : The Association of College Faculties and that of the Boards of Examiners. If these bodies should, after conference, think it best to call a meeting of the State and local societies to consider this question, it certainly ought to have more influence and receive more attention than if it came from a State or local society.

And furthermore, there are but two or three State societies that meet between this and the 8th of April next.

In view of all these things would it not be well to hold on a little, until we can hear more and know more, and till the profession generally can have an opportunity to consider more fully what ought to be done. It is sometimes a good thing to take time by the forelock, but then it is better to know that one can hold on—don't take hold of two or three hairs and have them pull out.—EDITORIAL, *Dental Register.*

ANOTHER WAIL OF WOE.

A little corn on a maiden grew,
  Listen to my wail of woe,
Caused by the pinch of a too-tight shoe,
Instead of a three a number two.
It grew, it grew :
  Listen to my wail of woe.

As time went on (as time will do),
  Listen to my wail of woe ;
The corn waxed red—the maiden blue—
"'Twas ten times worse than the grip (kerchew !)
Too true ! Too true !
  Listen to my wail of woe.

She had a seat in the end of the pew ;
  Listen to my wail of woe ;
  And a man with another seat in view
  Put his cowhide boots on her kangaroo,
  Oh, whew ! Oh, whew !
    Listen to my wail of woe.

SUPPLY AND DEMAND.—IF THE PAY IS NOT SUFFICIENT, HUNT ANOTHER JOB.

Your editorial in *The Record* of November 2d attracted my attention. You have headed it with "The Hard Lot of the Acting Assistant Surgeon," and you present his case as one of severe hardship in a pecuniary point of view. In fact, it is the burden of your remarks. I fully agree with both the views of the "Association of Acting Assistant Surgeons U. S. A.," and yourself. They are not paid enough for their services. Yet there is no compulsion for giving their services for the recompense awarded. The fact is that a man, professional or otherwise, must have a living; if in the medical profession he must take his chances against competition with his fellows, or he must hire himself out for what he can get. The Government, like any individual, should get its work done as cheaply as possible. And evidently it has found that it can get all the service of the kind for the amount it proposes to pay. I presume there are over twenty applicants for any vacancy or necessity that may arise. An experience as a contract or Acting Assistant Surgeon United States Army, a surgeon to a railroad company, and a manufacturing association, has taught me one fact, viz., that if I was not satisfied with the payment received I should decline to perform the service required; but these fifty Acting Assistant Surgeons decline to serve the Government for the price stipulated. There are another fifty ready to take their places. It is immaterial what is required of them. This they know beforehand, and if after making a trial they can, to use a vulgar expression, "get out," the fault is not in the contracting party of the first part. Certain duties are required for which so much money will be paid. The party of the second part is under no obligation to accept unless he is satisfied that he cannot do better with his property, viz., his accomplishments as a medical man. The remedy is easy—let him not make such a contract, and force the party of the first part to offer and give more for the service required. The fact is, there are too many doctors for the work to be done, and hence competition reduces the compensation. Government knows this as well as individuals, and finds it can get all the work required for the price offered. The contract surgeon has (if he chooses) an opportunity for outside work which adds to his wages, and oftentimes he can resign, and, by virtue of his previous position, enter upon a good practice in the neighborhood where he has been located.

From long observation the average doctor does not exceed $1,500 per annum, and were I to place it at $1,000 I would not be far out of the way. There is no obligation to become a "contract surgeon," and if after a trial of a month the wages are not satisfactory for the work performed, the remedy is easy. The same principle applies to all public offices: if the recompense is not sufficient or satisfactory, resignation is easy, and the vacancies can be readily filled. Whether private, public, or governmental, I am satisfied I can furnish the Government all the contract surgeons qualified for the duties required, to fill all the vacancies that may occur for insufficient compensation, and be glad for the opportunity.—Bodie, *Medical Record.*

INCOMPATIBILITY.

Incompatibility gives rise to many dangers which may in a great measure be avoided by the use of the utmost simplicity in prescribing. "The tendency of the present age is toward mono-rather than poly-pharmacy, and prescriptions with the orthodox *adjuvans* and *corrigens* are less frequently seen than formerly." (Piffard.)

This subject can only be glanced at here. The following simple rules may help the burdened memory of the practitioner :

Never use more than one remedy at a time, if one will serve the purpose.

Never use strong mineral acids in combination with other agents, unless you know exactly what reaction will ensue. They decompose salts of the weaker acids and form ethers with alcohol.

Select the simplest solvent, diluent, or excipient you know of, remembering that the solvent power of alcohol and water, for their particular substances, decreases in proportion to the quantity of the other added.

Never combine *free acids* with hydrates or carbonates.

Generally do not combine two or more soluble salts.

The following more or less insoluble salts will be formed whenever the materials of which they are composed are brought together in solutions ; The Hydrates, Carbonates, Phosphates, Borates, Arseniates and Tannates of most earthy and heavy metals and alkaloids, and the metallic Sulphides ; the Sulphates of Calcium, of Lead, and of the subsalts of Mercury ; the Chlorides, Iodides, and Bromides of Bismuth, Silver, Lead, and subsalts of Mercury ; the Iodides of Quinine, Morphine and most alkaloids.

Alkalies precipitate the alkaloids and the soluble non-alkaline metallic salts, and (also metallic Hydrates and Carbonates) neutralize free acids.

Silver Nitrate, *Lead Acetate*, *Corrosive Sublimate*, *Potassium Iodide* should nearly always be prescribed alone. The first with Creasote forms an explosive compound. *Aconite* should never be given in any vehicle except water.

Silver Nitrate, and *Lead Acetate* and *Subacetate*, although incompatible with almost everything, may be combined with Opium ; the latter forming with Opium a compound which, although insoluble, is therapeutically active as a lotion.

Corrosive Sublimate is incompatible with almost everything, and should be given in *Simple Syrup ;* even the Compound Syrup of Sarsaparilla is said to decompose it.

Tannic Acid, and substances containing it, are incompatible with albumen and gelatin. *Tannic Acid*, *Iodine*, and the *soluble Iodides* are incompatible with the alkaloids and substances containing them, and with most soluble metallic salts. *Vegetable Infusions* are generally incompatible with metallic salts.

Glucosides, such as Santonin and Colocynthin, should not be prescribed with free acids or Emulsin.

Dangerous Compounds, because poisonous, are : Potassic Iodide with Potassic Chlorate ; Hydrocyanic acid or Potassium Cyanide with metallic Hydrates, Carbonates, Sub-chlorides, as Bismuth Carbonate, or Nitrate, or Calomel.

Explosions would result from the combination of powerful oxidizers with readily oxidizable substances, as—Potassium Chlorate or Permanganate with Tannin, Sugar, Sulphur, Sulphides, Vegetable powders, Glycerin, Alcohol, Tinctures or Ether.—POTTER, *Physician's Visiting List.*

CONDUCTORS' DEPARTMENT.

HEALTH COMMANDMENTS.

First.—Thou shalt have no other food than at meal time.

Second.—Thou shalt not make unto thee any pies or put unto pastry the likeness of anything that is in the heavens above or in the waters under the earth. Thou shalt not fall to eating it or trying to digest it. For the dyspepsia will be visited upon the children to the third and fourth generation of them that eat pie, and long life and vigor upon those that live prudently and keep the laws of health.

Third.—Remember thy bread to bake it well; for he will not be kept sound that eateth his bread as dough.

Fourth.—Thou shall not indulge sorrow or borrow anxiety in vain.

Fifth.—Six days shalt thou wash and keep thyself clean, and the seventh thou shalt take a Turkish bath, thou and thy son and thy maid-servant and the stranger that is within gates. For in six days man sweats and gathers filth and bacteria enough for disease; wherefore the Lord has blessed the Turkish bath and allowed it.

Sixth.—Remember thy sitting room and bed chamber to keep them ventilated, that thy days may be long in the land which the Lord thy God giveth thee.

Seventh.—Thou shalt not eat hot biscuits.

Eighth.—Thou shall not eat thy meat fried.

Ninth.—Though shalt not swallow thy food unchewed nor highly spiced, nor just before hard work, nor just after it.

Tenth.—Thou shalt not keep late hours in thy neighbor's house, nor with thy neighbor's wife, nor his man-servant, nor his maid-servant, nor his cards, nor his glass, nor with anything that is thy neighbors.

STATE SOCIETY.

The annual meeting of the State Society will be held at Albany, the second Wednesday and day following, in May. The Board of Censors will meet Tuesday, the day before the Society meeting, for the purpose of examining candidates for the "M. D. S."

The programme of the meeting calls for the reports of the several committees, that of special interest being the report of the committee on practice. Dr. Palmer of Syracuse, Dr. Retter of Utica, and Dr. Greene of Geneva, will present papers; Dr. Barrett will deliver an illustrated lecture on comparative dental anatomy, and Rabbi Brown of New York, Dentistry of the Talmud. The business committee's work is still in progress and several other names will be added to the list of essayists.

OUT.

Dr. B. H. Catching, so long editor of the *Southern Dental Journal*, is out of dental journalism, at least for the present. He is not so completely out, however, but that a loud call will bring him back when he has once under way his Compendium of Practical Dentistry. He made the *Southern* what it is and left it to his successor with a reputation for enterprise and downright earnestness that Dr. Johnston will find it no easy task to maintain. May his success exceed his expectations and the *Southern* lose none of its prestige.

DISTRICT MEETINGS.

The voice of the business committee is heard throughout the State, and the programmes for the meetings of the several district societies grow apace. Good papers, many of them, and large attendance make such gatherings a success. One of the important things for district societies to look to is the election of delegates to the State society. Bestowe no compliments, but elect men who have the interest and will take or make the time necessary for a visit of a day or two at Albany in May.

CATCHING'S "COMPENDIUM."

Dr. B. H Catching, until recently editor of the *Southern*, contemplates getting out annually a book to be called "Catching's Compendium of Practical Dentistry." The book is to be issued at the end of each year, neatly bound in cloth, and will contain about 500 pages. It will contain the best practical articles from the forty journal published in the world, fully illustrated. No original matter will be used. The contents will be carefully classified and indexed. The book will cost $2.50 to $3.00, according to the amount of matter. Address him at Atlanta, Ga., for a circular telling all about it, and thus put yourself in the way of getting a good thing.

HE DOES!

The dentist should make a good politician—he is skilled in the use of gas and has a strong pull.—*Life.*

PELLETS.

She wanted a crown with a celluloid facing

The *Dental Record* has lost another editor, Mr. Lloyd Williams. His successor has not been named.

Pestiferous member: Mr. President, I rise to a point —— ——
Cranky President: So does a carbuncle.

The Baltimore College of Dental Surgery celebrated its semi-centennial March 20th. A jolly good time was had.

The cuts used in our first article are the property of Mr. R. S. Williams, and were kindly loaned the ODONTOGRAPHIC.

There was sorrow among the gods when Iodide of potassium, and cannibalism on earth when Bicarbonate of soda.—*Life.*

The Odontological Society (N. Y.) holds its meetings as regularly as clock work, and Corresponding Secretary Ives mails his notices in the same good old way.

"It calls for more skill to make a successful denture than to fill a difficult cavity." Perhaps this is the reason that every graduate is "An operator, sir, an operator."

The *Southern* will hereafter be dated the 15th instead of the first of the month. This is truly Odontographic, which reminds us that when good example is wanted all eyes turn this way.

Dr. Pearson's little appointment book should have been noticed in our January issue, but for some reason got into commission too soon. It's the most compact thing of the kind we know of.

An "esteemed contemporary" discusses "Hypersensitineness" in dialogue. The query that suggests itself at the end of the story is, "What in the Old Harry has this to do with the elevated tracks?"

A thick tincture of benzoine on cotton is an excellent substitute for sandarach as a temporary stopping. It is also more agreeable to some patients than chloropercha. It deserves consideration also as a material for filling roots.

Now and then, especially at the close of the term, we hear of outfits having been stolen by fellow students, which suggests that work should be finished and kits put safely away, or ten to one they will be "hung up" at somebody's uncle's.

The Maryland Dental Protective Association has been organized. One of the chief objects of the Association is to prevent the abuse of dental infirmary practice. It is alleged that the infirmaries are attending to patients who are able to pay a regular practioner. A committee has been appointed to wait on the faculties of the infirmaries and see what can be done about the matter.—*N. Y. Tribune.*

The University of Buffalo graduated 52 doctors and 16 druggists last month. The usual exercises took place, followed by a banquet. One of the features of the alumni meeting was the address of the faculty calling the attention of members to the larger demands on such institutions by the rapid advances in science, and asking co-operation in their efforts to further the interests of the college. Dr Barrett presented the address in behalf of the faculty.

We received the February number of the *Ohio Journal* one signature (16 pages) short. A few days later a friend to whom we had sent a copy of the January ODONTOGRAPHIC by special messenger returned word that a perfect copy would be more acceptable. (This also was one signature short). A few days later still our copy of the Proceedings of the *American Society of Microscopists* came to hand one signature short. Looks like the after-pains of *'grippe.*

In a notice of Dr. Evans' book on "Crown and bridge-work," the *Dental Record* reviewer says: "If Mr. Evans can also 'throw in' some little amelioration in the matter of spelling, and dispense with such atrocities as 'vise' and '*fulfill*,' he will be conferring a distinct benefit not only upon 'Britishers,' but also on his own countrymen who admire the literary style of such men as Oliver Wendall Holmes." Dr. Miller will consider himself also under the ban, for in the January *Dental Cosmos* he uses the word (we mean "atrocity") "fulfilled." But then we are not all of us "Autocrats,' nor O. W. H's, —not even the reviewer, if this may be taken as a fair specimen of his work.

A special to the *N. Y. Tribune* says: Boston dentists are not well pleased with the action of the Massachusetts Board of Registration in Dentistry, because it granted a license to Isaac B. Sawtelle, the fratricide, while the fellow was an inmate of State prison serving a sentence for a heinous crime. Many dentists have been dissatisfied with the administration of the present board, alleging that it has been unfaithful to the trust reposed in it, and generally unmindful of the duty it owes the profession in the way of protecting it from the competition of quacks and preventing the admission to practice of persons of immoral character. They threaten to bring the matter to the attention of Governor Brackett and to ask him to order an investigation.

THE

Odontographic Journal.

VOLUME XI.—*July, 1890.*—*No.* 2.

THE FERMENTS DERIVED FROM MICROBES, AND THEIR ACTION ON GELATIN, FIBRIN AND THE CARBO-HYDRATES. BY CLAUDIO FERMI.

TRANSLATED EXPRESSLY FOR THE ODONTOGRAPHIC JOURNAL FROM *La Semaine Medicale.*

BY J. LIVINGSTON ROSEBOOM, M. D., ROCHESTER, N. Y.

In many cases of pathology, it is necessary to admit, in reference to the action of microbes, the intervention of a special agent, unorganized, an agent that is designated under the collective name of "soluable products." Many of these soluable products are as yet unknown, but some have been demonstrated in certain diseases. Messrs. Roux and Yersen have proven the importance of their action in diphtheria.

With the exception of Dr. Bitter, who in 1876 studied the ferments secreted by the cholera vibrio of Dr. Koch, no one up to the present date has devoted much time to their secondary products or with their value in microbic biology. In the article that is here reviewed, the writer has conscientiously passed in review a certain number of microbes and has shown that there exists in the material in which they are developed products that are analogous to pepsin, tripsin, papain, &c. He found that the microbic elements were capable of secreting substances analogous to the ferments which are produced by the special glandular cells of animals and plants, and that these substances were capable of liquefying gelatin and fibrin and of transforming starch into sugar. These results are of great importance in general biology and especially so in human pathology, for they enable us to understand why certain microbes have a beneficial action in the digestive canal; they also enable us to see how the organized pathogenic agent can disappear, leaving behind certain active substances that may be toxic or not. This investigator has caused this culture material, that had been freed from all bacteria by different agents of sterilization usually employed, to act on gelatin, fibrin and starch.

An exact microscopic examination of these cultures on plates carefully made, assured him, in the first place, that all living elements had disappeared from these liquids used, which being deprived of all germs, were brought in contact with certain substances so that their action could be studied.

It would take too long to analyze in detail this article, extremely rich in facts, so only the principle parts will be given. The anthrax bacillus, the vibrio of Koch, the Finckler-Prior bacillus, the micrococcus prodigiosus, the micrococcus ascoformis, the bacillus ramosus, the bacillus pyocynus, the bacillus of Miller, the hay bacillus, the megaterium, the spirillum of cheese and the tricophyton tonsurans, secrete a ferment that dissolves gelatin and fibrin. The ferments cease acting on gelatin at a temperature that varies from 55° to 70° C (131°–138° F.) The ferment having the greatest resisting power to heat is that secreted by the Finckler-Prior bacillus. Exposure to cold (4° C. = 39° F.) also arrests their action, but with this difference—cold only paralyzes while heat kills them. The addition of different substances as hydrochloric acid 5 per cent., corrosive sublimate 1 per cent., carbolic acid 5 per cent., salicylic acid in a saturated solution, prevents the dissolution of fibrin but does not arrest the liquefaction of the gelatin. Caustic soda up to 30 per cent. is without effect. If the fibrin taken for experimentation is first mixed with a corrosive sublimate or carbolic acid solution, the ferments will have no action on it, hence care must be taken to free it from these antiseptics before commencing the digestion. Moreover, all the ferments that liquefy gelatin do not act on fibrin, and the writer has been able to dissolve albumen with the products of only five bacilli, as follows: Finckler-Prior, vibrio of Koch, micrococcus prodigiosus, bacillus of Miller and spirillum of cheese. This digestion of albumenoid material is not complete, for if the coagulation of the product obtained is impossible by heat, still hot nitric acid produces a precipitation. The culture medium on which the microbe is developed influences considerably the nature of the ferments which they secrete. It is necessary that the culture material should be sufficiently rich in albumen, as nutritive solutions entirely saline are the most unfavorable media; and as the culture on gelatin and the culture on potato give results absolutely different, there is no identity between the diastatic ferment and the ferment which liquefies fibrin and gelatin; at least these two ferments do not cease at the same temperature. They resist cold differently. The diastase can be developed only in cultures of starchy gelatin. The ferment that liquefies gelatin appears only in cultures on the white of eggs. Finally, in all cases where the nutritive medium has become acidified under the influence of the microbe the diastic action is clearly manifested, but the reverse is not true; a microbe can secrete a product transforming starch into sugar without acidifying the medium in which it is developed.

This review can give only a slight idea of the importance of the work of M. Fermi. In addition to the microbic ferments, he has studied parallelly the cellular ferments, as pepsin, ptyalin, trypsin, etc., and has shown the points of resemblance of these different products. A study of the original article, that is to be found in the *Archiv. f. Hygiene*, X., 1, 1890, can alone give a satisfactory idea of the writer's work on this subject.

DENTAL SOCIETY OF THE STATE OF NEW YORK.

CORRESPONDENT'S REPORT FOR '90.

BY G. L. CURTIS, M. D., D. D. S., SYRACUSE, N. Y.

During the past year the scope of correspondence has been large and varied. At home and abroad the dental profession is considering most prominently these two matters—the dental section of the Tenth International Medical Congress, which will meet at Berlin on August 4th, 1890, and the present system of conducting the dental colleges of America.

During the year many interesting letters have been received from medical and scientific societies, and from dentists in Europe, North and South America, and Australia, but lack of space forbids their incorporation in this report.

While some exceptions were taken to the manner in which the dental section of the Ninth International Medical Congress was conducted, it is nevertheless true that it was more largely attended, better represented, and more favorably spoken of than any other section.

It is hoped that America will be well represented by our profession at Berlin, and that the delegates selected will fitly uphold every branch of our work.

It is unquestionably true that the success of the dental section will depend largely upon America's efforts. The appointment of Professor J. Taft and Doctor W. C. Barrett as Honorary Presidents assures us of this fact.

I have not yet learned that the British Provinces will send delegates, although Dominion dentists have a natural part in the Congress and are satisfied that dentistry has taken its proper place in medicine.

For the third time dentistry has been recognized as a specialty in medicine, and on this occasion the recognition comes from Germany.

German physicians, who have been slow to perceive that the art of healing can be found outside the full-fledged doctor's medicine case, have decreed that there shall be a dental section in the Tenth International Medical Congress, and hence America may well feel proud of the colleges and energetic men that have raised the standard of dentistry to that of general medicine; but we must not suppose that perfection, or anything like it, has been reached. We must protect our profession and the public by doing all in our power to have such requirements and instruction in American dental colleges as shall prevent the graduation of incompetent, ill-instructed and badly trained men.

The people want progressive dentists, and we have a duty to perform in seeing that our dental educators are in accord with the spirit and knowledge of the present day.

It is our business to know why incompetent men are graduated from any dental college, and if such a disgrace is due to the presence there of professors who have abandoned the practice of dentistry, and who are teaching methods of work discarded by our leading practitioners, have we not a duty to perform in remedying this evil?

Europe and the Dominion of Canada call a halt in the procession of graduates. They naturally object to receiving from the "American grist mills" dentists with the husks scarcely broken. Is not such a rebuke sufficient to make us see, as professional men, that we must look to the educational rather than the financial interests of our colleges and students? Think of graduating a man with less than eight months' attendance at lectures and with only four months' practical experience. Add to this that he has had insufficient and unqualified instruction; that he has inserted less than a dozen fillings and not half a dozen artificial dentures, and that, as an illustration of the work done, he has been allowed to apply arsenic to sensitive teeth and thus destroy pulps; and in the face of such a college education can we ever expect foreign countries to look with favor on the "American degree?" We need a few more men with the courage of Dr. Shepard to bring the subject squarely before the vision of the profession.

A talk with many a student will convince one of the practical imposition which he has suffered. Who feels the lack of knowledge more keenly than he who finds that he is giving his hard-earned money for unfullfilled promises? The clear thinkers are demanding a higher standard and a more thorough dental education. If the present system is continued our profession, in spite of its grand progress in recent years, will be threatened with dire disaster by the advent of men who are not fitted for the work upon which they have entered.

The report from the District societies of this State, except the Third,* were never better. Meetings have been held once in six months, and the attendance has been good. An increase in members is noted, and the accessions, as a rule, are graduates of dental colleges, the latter fact showing an educational growth in the profession. The First district society, as usual, takes the lead in the number of meetings and in the quantity and quality of work. Within its boundaries are 1,150 dentists, yet only 115, or one in ten, are members of the district society. There are ten who are not members of the First society but of the Odontological Society, which considers itself possessed of the best blood in America.

In order that you may see how few practitioners are alive to scientific advancement, and are in active sympathy with dental societies in this State, I herewith give by districts the dentists registered and the membership of each district society:

DISTRICT.	REGISTERED DENTISTS.	MEMBERSHIP OF SOCIETY.
1st.	1,150	125
2nd.	550	82
3rd.	130	22
4th.	130	12
5th.	240	50
6th.	156	45
7th.	312	50
8th.	200	50
Total in the State, ...	2,868	Total, ... 436

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*Fourth? *Editor.*

Now if we compare New York with the other States, we find that the dentists of our own commonwealth are very backward in coming forward into the societies.

Division.		Dentists Registered.	Membership of Society.
New York	with	2,868	436
Maine	"	215	52
Massachusetts	"	1,000	125
Illinois	"	1,000	250
New Jersey	"	400	89
Ontario, Province of,	"	380	70

On the other hand, the New England Dental Society with six States to draw from, has 150 members, and the American Dental Association, whose range is the United States, has only 232 members, with an average attendance of 125.

With 2,868 practising dentists in the Empire State, our society has but eighty members. These things ought not so to be.

I also note that a very small number of non-society practitioners attend the district meetings. The Eighth district reports an average of 12, while in the other districts, if we except New York, the average is about three.

From a letter of Dr. Barrett of Buffalo I infer that the Eighth district society is in a most flourishing condition. He writes that it has taken steps which will place it in advance of all others, at least in our own State.

It has formed an alliance with the Society of Natural Science in Buffalo, and has commenced the collection of specimens in comparative dental anatomy, with a large variety already collected. In connection with the Museum of comparative General Anatomy of the Academy of Science, the Society expects to afford unlimited advantages.

As it is composed largely of wealthy men, money will be freely used to accomplish the end sought. At present it has the most complete dental library in existence. This excellent project is worthy of all encouragement, and those having valuable dental specimens could not do better than to entrust them to the care of this progressive society.

To Professor J. B. Willmott, of Toronto, we are again indebted for a fine report of progress in his Province, and he shows that he is awake to the highest interests of the profession. In speaking of the Royal College of Dental Surgeons he says that thirty-two students were graduated this year, and that the most of their graduates take the degree of D. D. S. as conferred by the University of Toronto.

Last year the Ontario Dental Society was reorganized with 70 members, and the prospect of a large increase this year is very bright.

Its next meeting will be held at Toronto, Tuesday, July 15th, 1890, and a cordial invitation to attend is extended to the members of the New York State Dental Society.

Doctor Willmott also reports that a dental law has been enacted by the Parliament of the North-west Territory, and now the entire country to our north from Gaspe to the Pacific Ocean is under "Dental law." No one west of the Ottawa, can practice without a diploma from a reputable dental college.

Since my last report, New Brunswick has also added to its statutes an act regulating the practice of dentistry, and requiring a college education as a necessary preliminary.

This action, I believe, leaves New York State alone in permitting men and women to practice dentistry without the knowledge and discipline afforded by college training. Can any one claim that this is progressive dentistry? Is not this law responsible for the fact that so many of New York's best dentists ignore the State society?

The object of the degree as conferred by the Dental Society of the State of New York, was to give the dentists in practice at the time of the passage of the dental law, in our State, a diploma which would be evidence of their ability to practice dentistry, as well as to their standing in the profession. That object having been attained, it seems just to the college graduates that some restrictions should determine who should be eligible for examination. Something like the following would protect the graduate and preserve the life and dignity of the degree:

No person shall be eligible for examination for the degree of M. D. S. who is not registered and engaged in the practice of dentistry in the State of New York, unless he holds a diploma from a Dental or Medical College recognized by the Dental Society of the State of New York.

Only a small legislative act is required to restrict the application for the degree, and this society should be able to right this wrong at the next meeting of the Legislature.

New York would thereby be placed at the head of dental profession of America; yes, and of the world.

Dr. W. George Beers of Montreal, in speaking of the progress of dentistry in the Province of Quebec, says that the new act regarding preparation for examination for admission into the profession is having a deterring influence upon unlicensed quacks. One of the chief grievances is an inroad of such men from Vermont, who know they are violating the law.

The Quebec students are required to attend a four years course of didactic and clinical instruction.

Dr. James M. Magee, of St John, New Brunswick, reports that the standard of dentistry there has been low. But I am pleased to note that through the Doctor's untiring efforts, a dental law has been enacted in that Province within the past month, and that the profession there is placed on a higher plane.

All who registered in conformity with the requirements of the National Association of Dental Faculties are members of the New Brunswick dental society. The Dental Cosmos is generally subscribed to. As you well know, Dr. Magee is one of the most active members of the profession. He expected to be present at the meeting, and we are glad to welcome him, as well as other representatives of the profession from beyond our border.

America will be pained to learn that our highly esteemed friend, Dr. W. W. Waite of Liverpool, England, has been compelled to retire from active professional duties because of loss of sight, and impaired health. He reports nothing new in dental affairs, and regrets that England is slow to recognize the advantages of a dental section in the International Medical Congress. His best wishes and sympathy are with us.

Professor J. Taft, of Cincinnatti, in a thrilling letter setting forth the great progress of dentistry during the past year, feels that we have reached a better understanding of the treatment of the diseases of the teeth and the mouth, and that we are just beginning to realize our usefulness to the world. His letter is one that could be discussed to the good of this society and of the profession in general.

Dr. C. A. Meeker, State Prosecutor of New Jersey, reports that last year was the most progressive one in the history of their society. The New Jersey dentists are advancing the profession and doing what we do not do—work in perfect harmony. Whether the matter is the management of a dental meeting, the defeat of an obnoxious man, or the obtaining of needed legislation from the State, and they are making preparations for an unusally brilliant meeting this year.

The number of dentists practising in that State is 400, and the State Dental Society, which was organized in 1870, has 89 members, and the local societies are in a flourishing condition. Emulation and ambition work side by side. Our New Jersey colleagues pride themselves on having the most stringent dental law in the country, and a copy of it will appear in the dental prints at an early day.

From a letter by Dr. Oswald Fergus, of Glasgow, we infer that the practice of dentistry in Scotland is regulated and under the direction of the British Dental Association.

That their "dental law" has of late been improved, but it is far from being perfect or even up to the American standard. A more stringent law is being considered.

At the Odonto-Chirugical Sceiety an opportunity is afforded for free expression of thought upon all subjects of practical value to the profession. He says that the dental journals are far from being scientific, and while the proceedings of the British Dental Association are carefully followed, little pabulum is supplied for the enquiring minds eager for advancement. American graduates are not numerous in his section, as foreign diplomas are not received with favor, the idea being that they are too easily obtained. This seems to be the general impression in all foreign countries, and it is to be hoped that the three years course as now adopted by our colleges will in a measure correct this unfavorable impression.

INDUSTRIAL DRAWING AS A MEANS OF EDUCATING THE EYE AND HAND.

ADDRESS BY GEO. W. RAFTER, C. E., ROCHESTER, N. Y.

Students of the Mechanics Institute.—In obedience to the commands of my friend, your esteemed President, I find imposed upon me the task of addressing you briefly this evening on the benefits derived from such study as you have pursued during the course here at the Mechanics Institute. This study has been mainly directed towards acquiring a knowledge of industrial drawing, and inasmuch as the commercial value to yourselves and to the community of such knowledge has been ably presented on previous occasions, I desire to call attention rather to certain benefits which accrue to the individual by reason of such study. Of first importance among such I may place that education of eye and hand, which follows even moderate attainment in this direction. Locke, in his thoughts concerning education, says, in effect, when one can write well and quick I think it may be convenient, not only to continue the exercise of the hand in writing, but also to improve the use of it further in drawing. This study, he observes, is useful in that it enables one to express in a few lines well put together, what a whole sheet of paper in writing would not be able to represent and make intelligible. Such study assists the apprehension, and relieves the memory, and furnishes an expedient which happily supplies the defects of language, and enables the eye to receive what cannot be conveyed to the mind in any other way.

It is this training of the perception of form which I wish to especially emphasize at this time. Without it, one goes through life with only misty ideas of his relations to external objects. With it, the friends we meet, nature, everything is instinct with a new, vivid and abiding interest. These advantages however, may be considered possibly as pertaining to the domain of aesthetics rather than to the practical grind of daily work, in which, willingly or unwillingly, the most of us pass our lives ; but a little reflection will show that a correct appreciation of form, is, in reality, the most practical of all attainments. As draughtsmen, architects or engineers, those who are now students, will be called upon to design new forms, and to adapt old forms to uses never before made. Facility in such work will depend almost entirely upon the power of closing the eyes and constructing a clear mental picture of the thing which it is desired to draw. This power, once acquired, joined with readiness of hand, will make not only skillful draughtsmen, but add to the power of producing original forms, while without it, one can only be an imitator of the work of others. Nor is it a thing difficult of attainment. The studies in linear projection have been designed especially to assist its development, and as one who has been through the mill, I think I may safely say, that if on making a careful introspection into your own minds, you have any doubt of possessing this power fully, you should turn back, take up the study of projections anew, and faithfully pursue it until conscious of possessing the ability to create at will a mental picture of the thing to be drawn. For this purpose one needs to work out problems in projection somewhat more difficult than those of the ordinary elementary text-books. Such subjects as the penetration and development of a cone into a cylinder when both are placed at oblique angles to the projecting planes may be selected, or the penetration of oblique cones and cylinders into irregular surfaces ; select, in short, subjects which are not to be found worked out in any text book, but the solution of which must perforce of necessity result from unaided individual effort. An hour's work per day for a year, of the sort here indicated, ought to give to every student some measure of the power of forming mental pictures, even before a single line has been drawn.

It will be understood that I do not intend to suggest confining the preliminary work of a course in industrial drawing exclusively to the linear projection of mathematical figures. I am merely pointing out what appears to be the best method of developing in the student the ability to create form.

This power of forming a clear mental picture of the thing which it is desired to draw, once fully acquired, its possessor becomes conscious of a command over all concrete objects, of which previously he had not even dreamed. Nor is such power easily lost. As years go on and those who succeed to the management of various business enterprises requiring executive talent rather than the skill of the draughtsman, find themselves, for lack of time, using the pencil less and less, but rather leaving such work to the younger generation, who, in their turn, are learning the lesson of patience which its use enforces, nevertheless the effect of attaining this power will show itself in every department of the work, and especially in the ability to give to other draughtsmen and to foremen, in a few words, a clear idea of the thing which you require done. Fortunate, therefore, is the business enterprise whose active manager or superintendent has once fully acquired this power, and doubly fortunate are the artisans who have not only acquired it themselves, but whose opportunity it is to work under such a superintendent.

The most of the students of the Mechanics Institute are of those who have, in every sense, to make their own way in the world, and are, therefore, even the youngest, disposed to take life somewhat seriously. From such it will be idle to conceal, that however earnestly all may work, some will excel, and, in the end, the fortunate few will probably far outstrip their brothers in the race. Of this fortunate few it can only be said, that, for them, circumstances have been more propitious than for the majority, and, even he who comes last, may find consolation in considering, that, had it not been for the emulation, his attainments would have been even more indifferent; while he who stands first, may learn humility by remembering that it is only the accident of inherited tendency, or better opportunity for work, that has enabled him to outstrip the others in the race. In any case, all students will go from the Mechanics Institute on the completion of the course, conscious of being better and broader by reason of the training received in its classes.

I wish also to call attention to the importance of improving every moment of the time while here, so that when doing drawing as actual work, as a means of earning a livelihood, neither your own time nor that of the employer is wasted in looking up such matters as are the basis of elementary drawing, and which can be better learned here. In the busy office of either a manufacturer, architect or engineer, there is little time for student work, and, other things being equal, he will be the most successful, who can take up and despatch work with the least explanation and the fewest questions. Do not, therefore, become infected with the idea that deficiencies here can be easily repaired when you have attained positions. If the office or shop in which the student finds employment is at all a busy one, he will be quite likely to find its head, however kind-hearted, too busy to act as school-master. The student is thrown upon his own resources, and success or failure will depend very largely upon how thoroughly he has profited by the preliminary studies here.

In conclusion, I desire to say that it is not my intention to speak as one having authority, but rather to exercise, in a limited manner, the clear privilege of the upper classman to advise the lower ; to speak as a student to students, the only difference being that I have worked in this direction for eighteen years, while those here assembled have, as yet, worked but two or three. My intention has been to present prominently a few things which I have found of practical importance, and if even one student is benefited by what I have said, I shall feel that the invitation of your President, which, from a sense of my deficiencies I somewhat reluctantly accepted, was not entirely in vain.

PRESIDENT'S ADDRESS BEFORE THE VIIth.

BY CHARLES T. HOWARD, D. D S., ROCHESTER, N. Y.

It is always with pleasure that we come together on the last Tuesday in April: There are pleasant faces and hearty shaking of hands that we have often seen and felt. Every repetition makes them nearer and dearer to our hearts. Our lives are slowly but surely being interwoven with each other. Every day sees the weaving of an additional thread, and each year bears evidence of a stronger fabric.

This society is especially to be congratulated on the success attending the union conventions of the societies of the four judicial districts of Western New York, started here four years ago. The idea spread like wild-fire. The resulting conventions rank among the best the United States affords. There cannot be the least doubt that they have benefitted us both in membership and spirit. This should inspire us to make our own annual gatherings exceptionally attractive and valuable.

In attending the union conventions it seems quite evident the members from our district are not as ready to take part in open discussion as they ought to be. Other districts are a trifle ahead on this ground. It is not because there is a lack of talent among us. The same hesitancy also shows in our annual meetings. This should not be. If nothing else will correct it, let us use our annual meeting as a training ground. This would greatly improve the spirit, interest and value of our own gatherings, and the future will hear our voices in discussions before the larger conventions. We are to have the union convention meet with us next October. Let us begin the training now and start that October meeting right here. Bring forward whatever you have in the way of specimens, casts, illustrations and appliances. There is a business committee, Dr. Miller, Dr. Line and Dr. Smith, whose duty it is to arrange such things. If you have not already done so, let any one of the committee know what you have brought, and they will see that it is placed before this convention.

There is no committee to take charge of your thoughts, so bring them forward yourself. They will be gladly received.

It gives great pleasure to know we are of use to others ; and so I repeat, in substance, what a member recently wrote me. Though he could not well, under the circumstances, write a paper for this convention, he felt that he ought to do something, for he had received through the meetings far more than he had given.

The question arises : Who had given so much to him ? It was not I. Was it you ? I doubt your thinking so. The truth is, it was all of us. If you had not said what you did, the one sitting next to you would not have given us that valuable idea. This should encourage us to take hold with a will and make this convention another season profitably spent.

We are happy over the fact that our vice-president, Dr. Hofheinz, whose alarming illness at the time of our last annual meeting was a subject that touched our hearts, has recovered his health, and is with us again. To all appearances he would be well able to bear the strain of President for the coming year.

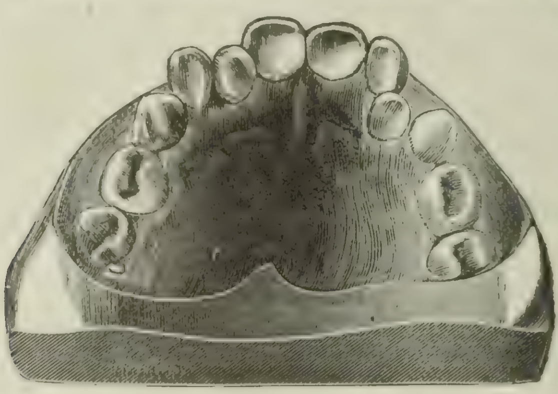
Our recording secretary has done a good work, as will be seen by his report ; our treasurer will report good news, and good news will be needed to tide us over next October. We have a live corresponding secretary. Few societies can say that. Listen carefully to his report.

In looking over the list of dentists of this district we wonder why we have not more members from the towns east of here, on the line of the Central railroad, and north. There is something wrong. We ought to have more than two members from towns like Palmyra, Newark, Lyons, Clyde and Sodus. If any of our members are acquainted with dentists in that section, they should put forth a little personal effort to bring them into the society.

Let us all show an individual pride in our society and its meetings, for it is one of the class of prime agencies that have elevated the profession and are holding it in an honorable position.

CASE OF SUPERNUMERARY DECIDUOUS TEETH.

The accompanying illustration is from the superior maxilla of a little girl of five years. The case is remarkable simply for the number of incisors, four of which are laterals, well developed, and so nearly alike that position alone would determine which should be extracted, if it were worth while to resort to so needless an operation.



PRESIDENT'S ANNUAL ADDRESS.

Presented at Albany, May, 1890.

As on previous occasions, so on this, it becomes the duty of the presiding officer to give the usual concise statement of the condition of the State and District societies, with such suggestions for their improvement as he may think proper, and all at the risk of repeating himself, or the better qualified who have held office before him. To do this at all successfully he must at times resort to microscopic vision, and like the worker with high powers, when fair interpretation of what he sees fails him, draw more or less generously upon his imagination, spreading the result as that of diligent research and inquiry. This, it is hoped, is not wholly the case with the present incumbent; for some things have really grown in size and importance during the year, and to that degree that, for the time, they have shut out completely the scene beyond. These things, however, concern us less as a whole than as a factor of the dental profession, and an important one in the growth and development of dental science and art, especially within the confines of this State. But first of matters that, like the poor, are always with us.

The membership remains practically the same, partly for the reason that under the rules, little change is possible; but we hear of doings in the district societies that favor additions to this organization to the full limit permitted by the by-laws. A year ago the applicants were more numerous than the places at our disposal, and this year the strife for permanent membership is likely to wax warm. It may be noted, too, that some of the district societies are much concerned, as such, in their representatives, whether permanent or delegate, and that their permanent representatives are always chosen from the board of delegates, who in their turn are the most desirable men who will take, or make, the time necessary to attend these meetings. In this manner some of the district societies are putting themselves in the way of controlling the central organization and dictating not only its course, but also that of professional dentistry throughout the State. Not that there is any likelihood of this power ever ending in abuse, and yet it becomes the district societies generally to put forward their full complement of delegates, favor their advancement to permanent membership, and see to it that both classes attend these meetings and take an active part in what is done.

The representation of the district societies in our permanent membership is as follows:

1st	district,	21	2d	district,	20
3rd	"	9	4th	"	6
5th	"	8	6th	"	3
7th	"	6	8th	"	7
		44			36=80

These figures, plus eight delegates to each society, make a very material change in the representation; but these again need modifying for the reason that some of the societies are represented by permanent and delegate members in one and the same person. Without such modifications the original figures show the First and Second district societies evenly matched ; but together these hold the balance of power as against the rest of the State, a fact that might become important in questions of relative district rights and privileges.

Nominations to permanent membership should be considered early, and it is suggested that the rule of one member of the committee from each district be adhered to.

The Board of Censors has held but one meeting since our last annual gathering—that of yesterday,—and the result emphasizes the fact that it is yearly growing easier for the would-be practitioner in this State to go through the eye of a college needle than enter by the door of this unique institution, broad as that door is. This, as suggested elsewhere, will continue until the board, ceasing to be useful, becomes purely ornamental. In this connection it is well to note the change, even among those in authority, toward a separation of the teaching and examining faculty. In law such separation is an old story ; in medicine there is a strong effort to make it a fact ; and dentistry, not to be left, has its advocates in the schools themselves. In the course of his report as Correspondent of the Seventh society, that officer read several letters from members of as many dental faculties, one of which we herewith, in part, reproduce :

"Crude as is the method, I yet hope *everything* as regards 'influencing for good' the coming dentists, from the 'State boards of dental examiners.' It is the means I have advocated for more than twenty years, and with all its short-comings, and even prostitutions, I have not lost faith in its *eventual admirable control.*

"The 'association of dental faculties' I regard as an absurd conglomeration ! Let the colleges teach, *each just as it pleases*, and let the State boards be the judges of the work each does, and let the judgments be based entirely upon the examinations (open and above board) of the candidates."

The letter is signed "J. Foster Flagg."

The writer's characterization of the National Board of Dental Faculties is something in which few, if any, of us are likely to concur. The work of that body seems to us as necessary as it is peculiar, in that it is a step in the very direction indicated in the letter,—that of placing dental education with the colleges and making the examinations over to another body free of influence of any kind for or against the candidate, except on the sole basis of merit. It is a long way in the future, perhaps, but recent developments in the direction indicated make it more than possible that the Board of this Society may yet have other business than that for which it was specially created.

Mention of the board and its affairs reminds us of the loss by death of one who has been identified with its best work for years, and long an honored member of this and the Third society The vacancy created in the board by his death must be filled at this session, and it goes without saying, that the district from which he hailed will find it no easy task to place in nomination a man as worthy of their honor and professional advancement as the late Samuel D. French. It will be in order early in the session to name a committee to suggest suitable action by the Society on the death of this late member. Further mention of this matter may be looked for in the report of Censors.

The Treasurer will, as a matter of course, make an exhibit greatly to our credit. Our Correspondent, though hard pressed with other and, to him, more important matters, will tell us of other societies, and perhaps suggest for our future guidance. The Committee on By-Laws must watch and wait developments of this meeting before it can find much to report upon ; while the Committee on Ethics will detail our behavior during the year, especially if bad. Prize essays are no longer looked for, now that the prize therefor is not available. As to the Arrangements made by the standing committee entrusted with that matter, so far we have an improvement on former effort. The clinics and exhibits will test the committee's forethought later. The Committee on Law has been busy during the year, and has much of interest as the subject matter of its report ; Practice will more than duplicate its excellent work of a year ago ; Publication will do as its predecessors, tell just how the Transactions happened to be a little late. Business will occupy little time now, but the time consumed and trouble had bv the committee to bring our programme for this meeting to its present state of perfection can never be known except to those directly concerned.

The district societies have met as usual, one or more times during the year, and on two occasions these meetings have taken on more than a local aspect. The four western societies held a joint meeting at Elmira last October, and in spite of the misgivings of many of its own members, the Sixth society succeeded in engineering to perfection one of the best joint meetings ever participated in. Want of numbers was more than offset by the energy and ingenuity of the membership. The next moveable feast of this quartette of societies occurs at Rochester, October, '90, the Seventh society officiating as host. The great meeting of the First society, last January, stands alone among meetings of the year—local in name, but national in character and importance, and to that degree that the fact of the existence of a national organization was at times completely lost sight of.

It was thought a year ago to tax or assess the district societies in behalf of the Committee of Dental Law, to add to the resources of that committee whatever might be obtained in this manner under the name of volunteer fund. As district societies are like individuals, in that the quantity of human nature therein ranks as a constant, it was a foregone conclusion that the method in question should fail, not merely for reasons set forth in the resolutions adopted by at least one society at its recently held annual meeting, but because of that trait that prompts a man to pay only what he has agreed to as a party to a contract. To subscribe is well enough, but when the matter is so put that it has about it the air of a demand, it becomes an attempt at highwaywardness, and is regarded as such, with the loss, not only of the desired addition to the fund, but also the good will of otherwise excellent support. It becomes this Society, therefore, to undertake only what it can accomplish by means concededly established, obtaining the necessary funds for the same through the usual channels.

A matter of much importance to dentists, district or local societies, and the profession at large, comes within the sphere of usefulness of the societies in question—that of asserting themselves as factors in shaping public opinion and estimate as to the professional as opposed to the trade character of modern dentistry. Of late years every considerable city in the country has had added to or developed within it an element that must needs appeal directly to the people for support, and this through dodgers or the daily press. This is is right and proper from a given standpoint, and emphasizes the business talent of the trade side of that large body known to the public as dentistry. But having dentistry, or knowledge thereof, thrust upon them by these methods, that part of the public favoring the professional side falls unconsciously into notions, the use of the only terms in which trade dentistry is capable of expressing itself. It comes to pass, therefore, that the tooth carpenter as distinguished from the dentist ; as the quack from the doctor ; the pettifogger from the lawyer ; the pulpiteer from the preacher, makes not only for trade dentistry, but the profession as well, the very vocabulary in daily use during office hours, as between patient and dentist, real or so-called. A dentist's office is hardly known in some places—dental " rooms " and " parlors " have taken its place Dental " galleries " and " studios " are yet to come, but their dim outline is more than distinguishable in the near future even now. Prices are charged for fillings—not filling teeth, mind you,—and teeth are sold by the set, full particulars of which are set forth on the painted sign at the front door, or foot of the stairway, and the styles, spring or fall, practically illustrated in the show case hard by. " What," asked a lady, " is your price for gold fillings ?" " A dollar a pennyweight, madam, to customers." The question suggested the school in which she had been dentally educated—that of Dodger & Ad. It also suggested not only the necessity for, but the possibility and means of correcting the barbarisms that have grown and developed as popular dental terms and dental phraseology. That it is possible to correct this well-grown evil is evidenced in the conversation of patients for days after the published reports of district or less pretentious society meetings ; and the means for effecting this much needed reform is, we need hardly say, the daily press. Advertise the fact of the meeting to be held, giving time and place, discuss questions, technical or otherwise, have a good outline prepared for the local papers—not as a report, however, but as news. If you have, or your society, anything to say, the ubiquitous reporter will hear it said, get the pith of the matter and give it all the space it deserves in the very next issue of the paper he has the honor to represent. He may not be able to spend the whole evening with you—especially during a campaign,—which makes it obligatory upon you to see to it that the matter is ready when he calls. District societies meet often enough, perhaps, as it is, but every city and good-sized village should have its local society, with frequent meetings, say once a month, and the line should be sharply drawn between professional dentists and those who follow dentistry as a trade. To this end we know of no better plan than a local organization, membership in which is possible only to those in good standing in the district society meeting in that particular territory. This is no mere speculative matter. It has been tried ; it is in operation to-day ; it is a success. Thus inaugurated and continued a few years, and the time will come when the general public will discriminate as readily between the professional man on the one hand, and the bill-board and rat-trap dentist on the other, as between oil and water.

One of the very serious things that dental societies are compelled to face regularly is the question of a programme for a meeting. As a Society we know nothing of the details of preparation—correspondence to ascertain who will make it worth while for others to attend, suggesting topics to would be essayists, urging the bringing out of what to them seems of little moment, crowding them with reasons why they should not back out when they have once promised to contribute, hastily perhaps, to the success of the occasion. All this, we repeat, the Society knows nothing of. With us it falls to the lot of the business committee to prepare the table for the annual feast. In the early history of any organization this is not a difficult thing to accomplish, for if success is assured, there are many who are not only willing but anxious to be in at the beginning. Later on, however, enthusiasm dies out, the new broom grows old, and the trials and tribulations of the committee in question grow apace. Members have written themselves out, or know of no topic they care to discuss, when it is suggested that some one outside might be inflenced to appear and entertain, if only his expenses could be paid. When this is done in the case of a member of our own profession and of national reputation, or of any other profession when he has what we wish to possess, whether matter, method or opinion, well and good ; but when the call is merely to entertain, fill out the scheme for the meeting and with any topic of his own selection, the plan may be fitly characterized as pernicious and calculated to lead to indifference, if not downright laziness, on the part of the membership. Then, too, the Society publishes to the world its impoverishment as to material, or its incapacity to handle it, and justifies the conclusion that its purse is larger than its head, or that it has more money than brains. There may be a limit to available men and material in a society like this, unless we content ourselves with each other and a repetition of ideas ; but having the district societies to draw upon there should be no difficulty experienced in getting sufficient material, scientific at that, to fill in the time to repleteness. Some of the papers, particularly those read at the first district and union meetings, appear almost immediately in print ;

but this is not the case, cannot be, with papers read at at the annual meetings a month or less before the State. It is suggested that the business committee of the future keep an eye on the announcements of these district meetings, enter at once into correspondence with the authors of papers and secure, either in abstract or elaborated form, according to the subject-matter, such of them as will enhance interest in these meetings and at the same time do all concerned credit when reduced to type. The papers selected should be largely scientific, some think wholly so, rather than practical, as more in keeping with the requirements of so pretentious a body; but the times are not yet ripe for so complete a separation of things scientific and science applied, and until that time comes our programme must contain a fair proportion of what will draw and hold the membership together. The practical in dentistry has by no means been exhausted ; while for the scientific, we have hardly touched it,—how lightly we have only to refer to the leading editorial of the March number of the *Dental Cosmos* to learn.

Again, papers mean, or should mean discussion, intelligent and worthy the name. Authors, therefore, owe it to themselves and to the body to which their work is presented, that an outline, perhaps an abstract, perhaps the whole paper, should before the meeting, be placed in the hands of a committee qualified to pass upon it. At present the higher the character of the paper, the farther removed the subject-matter from daily routine, the more certain it is to go by the society without discussion, and into print duly adjudged excellent, and its author a painstaking and talented fellow. There is a great fall of game, but the shooting is all done by one man. The need of some such proceeding is felt in every intelligent society, and one member at least of our national organization has declared for reform. In deploring the paucity of ideas brought out in the discussion of a given paper last August, he says "Nothing better could have been anticipated. The subject (meaning Dr. Talbot's) is a profound one, and there should have been a synopsis made in advance and furnished to members, and this should be done with all papers when published. By the adoption of this plan the discussion will be worthy of the name. It is idle to expect a man can do himself or the subject justice without time for reflection, much less study."

This plan has been in operation for years in the American Society of Civil Engineers, and to this day no reason has been offered for setting aside, or even subjecting it to modification. In a letter, Secretary of State Bogart writes us:

"When a paper is finally in shape for presentation, a time is fixed for its reading at a meeting of the society, and if the author has presented it so that there is time to do so, it is set up and issued in advance form to such selected engineers as are thought by the author or editor to be apt to diacuss the particular subject treated by the paper.

"In the case of important papers a letter is sent out with the advance copies, particularly inviting discussion. At the meeting at which the paper is presented, written discussions which may have been received are also read, and the subject is discussed by the persons present who care to take part in the discussion. This discussion is taken down stenographically, and is sent to the persons so discussing for revision; finally all discussions are sent to the author of the paper, who has the right to finally close the discussions with such remarks as he may deem proper. The paper is then issued in one of the regular numbers of the Transactions."

The geological section of the American Society for the Advancement of Science issues a large pamphlet in which papers to be read are mentioned, some by title only, others in such form that like the well-written preface of a book they give the purpose of the author, with perhaps some mention of the facts or methods by which his purpose is to be effected. The American Pharmaceutical Association has also given the plan a trial, and found it to work admirably. Something of the kind must be done in dental societies or they cannot but continue in the rut still traceable to the time of their inception. With us it remains for the business committee of the future to put the plan to the test.

The International Medical Congress, as all know, will be held in Berlin the coming August. The dental section is organized and its preliminary announcements in the hands of those likely to go. The distance and expense are great; but coming in a vacation month the attendance from this side of the Atlantic promises to reach at least fair proportions, and will be more than represenative in character. This society will be represented, but whether in the individual capacity of those who attend, or as delegates (?), will appear later in the meeting when the matter will be brought to your attention.

The International Dental Congress finds frequent mention in our periodicals, and is bound to be considered with reference to '93.

It is a foregone conclusion that as surely as a World's fair is held that year, there will be a congress, national or international, or a memorial meeting, or perhaps a gathering merely of dentists. It will be dental, the biggest thing of the kind known to modern dentistry, and a grand success throughout.

DENTAL SOCIETY OF THE STATE OF NEW YORK.

BJONES DESMITH.

[REPORTED EXPRESSLY FOR THE ODONTOGRAPHIC JOURNAL.]

This Society held its twenty-second annual meeting in the parlors of Bleecker Hall, Albany, May 14 and 15, 1890. The meeting was called to order by the President, Dr. J. Edw. Line, the minutes of the fourth session of the twenty-first annual meeting read and approved, and roll-call responded to by members and delegates.

The committee of arrangements made a brief report and announced itself in readiness to pass upon the credentials of delegates.

A recess of five minutes was taken that members might make themselves good on the books.

The President delivered the Annual Address.

Treasurer Mirick reported balance from last year, plus receipts, $1,826.91 ; disbursements, $1,307.77, leaving on hand $519.14. The report proper was referred to the Committee on By-Laws, while the resolution remitting the fees of the Fourth district society was tabled. The Treasurer submitted a further report in regard to members in arrears.

The Board of Censors reported through Dr. French that five candidates for the "M. D. S." had passed the ordeal. Sixteen had come up for examination. Suitable resolutions in regard to the death of Dr. S. D. French were also presented.

Through some inadvertance the Committee of By-Laws had not been appointed the year before, or if appointed, no record made of the fact. The President therefore named Drs. Jackson, Hart and Greene as such committee.

The Committee on Ethics reported "Nothing."

Dr. Starr, of the Committee on Business, reported the programme of the meeting, also the order of business for the afternoon session.

Dr. Straw reported three essays in competition for the Whitney memorial prize.

Dr. Carr, of the Committee on Law, presented an elaborate report, which was ordered received, and the recommendations therein taken up seriatim.

The first recommendation, in regard to the payment of a fee of one dollar from each registered dentist in the State, was moved.

Dr. Carr said the report showed the expense of cases taken before the Supreme Court. The fees of the attorney seemed large, but when the facts were taken into consideration, the charges were reasonable indeed. One case was commenced in February, but not taken up until July, and the attorney was in Court more or less of every week during that time. Postponement from session to session and term to term was the rule.

Dr. Barrett offered an amendment to the effect that the State Censor of each district be made Chairman of a committee to collect funds from registered dentists, and that it be within his province and power to appoint one member from each county of his district as an active associate in this work. The recommendation as amended prevailed, and the several Censors were appointed in accordance therewith.

The second recommendation was that each district society appoint one member in each county to report persons practising illegally in that county. Some one was needed in each county to look after the registration books and keep the committee informed.

Dr. Barrett thought this could be referred to the District Censors.

Dr. Curtis said the third district was so represented, and had been for years, and the committee was supposed to report all cases of illegal practice.

A member gave it as his opinion that the committee appointed to solicit the dollar from each registered dentist would be a good one to report cases of illegal practice to the Law Committee. The second recommendation was adopted.

The third recommendation, that the Committee on Law be authorized to have 3,000 copies of the dental law printed, was adopted.

The fourth recommendation, that the Committee on Dental Law confer with the State Medical Society with a view to having the essential features of the dental law incorporated in the bill to be presented to the next Legislature by that society, was adopted

Dr. VanWoert thought there should be a complete list of the registered dentists of the State made. He thought the Committee on Law would say that the district societies should render a quarterly report of such to the State society, or a representative of the

State society in that district. He had drafted a letter and sent it to the several district societies, and in return had received some very satisfactory replies.

Dr. Mirick wanted to know if the adoption of this report would make it incumbent that the amount be paid.

The President thought it would.

Dr. Barrett wanted the report turned over to the Committee on By-Laws, the committee to report at the earliest possible moment.

Dr. Hart, of that committee, thought the committee should receive some advice from the society.

The President said the recommendations should come from the committee.

The financial part of the report of the Committee on Dental Law was then referred to the Committee on By-Laws.

Dr. Jarvie said there had been one thing overlooked by the society : The recommendation of the Board of Censors appointing beneficiaries to the Baltimore College of Dental Surgery and the New York College of Dentists. On his motion scholarships were given the gentlemen named.

Dr. VanWoert, of the Committee on Publication, made a brief report. He said that one or two of the district societies had reported increased membership, a fact of which he was ignorant at the time he had sent the proceedings A few hundred more copies should be printed to give each society its full number.

Dr. Rich thought members behind in their dues should not get proceedings. There were some who, if they could get the report without dues, would not care whether their dues were paid or not.

The President thought that phase of the question belonged properly to the district societies.

Dr. Jarvie's motion to adopt the recommendation of the Publication Committee to increase the number of copies of transactions per year was adopted.

The reports of the several district societies were read by the Secretary.

The resolution of the Seventh district society in the matter of the $5.00 assessment for use of the Law Committee was referred to the Committee on By-Laws.

Dr. VanWoert suggested that the Secretaries of the several district societies send their reports in time to be gotten into shape and read without difficulty. Many of the reports were made up on the spot and done in a hurry, consequently they were difficult to read. They should be sent in a week or two ahead.

Dr. Barrett saw in some of the district society reports that delegates had been appointed to the International Medical Congress. He wished to say that credentials would avail nothing as this was not a delegate body. Delegates should not be appointed by any society whatever.

Dr. Straw understood from the report of the Censors that it contained some resolutions of respect to the memory of one who had been with them and a Censor with them for twenty years. He suggested that the society adopt similar resolutions as a body, and moved the appointment of a committee of three, to draft resolutions of respect to the memory of the late Dr. Samuel D. French.

The President appointed Drs. Straw, Baxter and Wright.

Dr. Rich said he had been requested to read a resolution bearing on the affairs of the Fourth district society. This resolution was adopted as an expression of the feelings of its active members. They had for a number of years enjoyed the State Society's generosity, and had a little pride about it, and had endeavored for the last few years to pay their dues, but it had been very onerous on the pockets of a few. They wanted to remain a part of the State's dental system, but did not want to do it, and have a representative in the Board of Censors, without sustaining themselves financially. They did not know what effect this resolution might have upon the State society, and for that reason action had been delayed, to give them opportunity to state the case formally. They were not able, in fairness to themselves, to pay the regular assessment. It was impossible to keep up profitable interest in local meetings because the district was large and the membership scattered. There was so little interest taken by the members that nothing could be done. This was thrown out to draw suggestions, which he would send to his society.

Dr. Barrett moved that the resolution be received and entered upon the minutes.

Dr. Jarvie wanted to offer a word of protest against certain expressions in that communication: "It is on account of insufficient protection of that district." It casts a reflection upon the State society—upon the Law Committee. He was not one of the Law Committee, but had had a great deal to do with the enforcement of the law in Brooklyn, and had been in communication with the Chairman of the Law Committee, more or less, for two or three years. He thought the Fourth district had received as much protection and attention proportionately from the Law Committee as any other district in the State. The Fourth district had not contributed one cent towards the work. It was small, to be sure, but it had not done even in proportion to its membership. He did not think the State society should receive a reflection of that kind without protest. The Second district society had contributed two hundred dollars over and beyond what had been taken from the State society's treasury, to aid in the enforcement of the law. The First district society had given, he thought, the same amount, or more, and if each district in the State had done in the same proportion, members would not find the committee here with a deficit of $1,100. The most expensive suit the committee had had anything to do with was the so-called Herkimer case. It had cost a great deal of money, and there had been a great outcry from the dentists of that section on account of not being protected, and yet they had not contributed a dollar. It was making paupers of these societies to remit dues year after year. He did not think they wanted to be paupers, and yet he did not like the spirit of this communication.

Dr. Barrett's object in offering his motion was to bring the matter before the State society that it might have proper consideration and be properly disposed of. He did not wish to be understood as endorsing the expressions contained in the resolution. He felt very much as Dr. Jarvie had expressed himself. If the Fourth society would show good will, that would be something ; but to claim that they had been deprived of protection when they had not even supported their own society, required a little cheek on their part. He did not say this reproachfully, because all knew how they had been situated, but they should not come here with a complaint about the State society.

Dr. Colby wished to contradict the fact that they had not made contributions toward prosecutions. As a member of the State society he had contributed his dues regularly, and other members had done the same, and had struggled for years to sustain the Fourth district society. They had over twenty-three per cent. of the territory of the State, and less than five per cent. of the dentists. They had dentists farther apart than from Albany to New York, and one county without a dentist, good or bad. There were very few dentists in their district, and the burden had always rested on a few in Saratoga Springs, Schenectady and elsewhere. They had been in that condition two or three years, and felt that they could not sustain the society and pay the dues. It was nothing for the First district society to pay twenty-four dollars. They did not wish to be considered beggars, nor did they like to have the dues remitted, and yet they were not able to pay. It devolved upon five or six members of the Fourth society to take care of the whole business of the district.

Dr. Rich wished to correct the impression that the resolution was a slur on the Law Committee. There was no such intention. They had too much pride in the work which the Law Committee had accomplished to do anything like that. The committee had done a great deal of work and should receive all commendation. They wished to pay their share, but objected on account of their small membership to paying in the same proportion as other district societies. The resolution said they had insufficient protection, and the resolution meant just what it said. The Law Committee had been notified, but he thought no notice had been taken of the matter except once. They had good grounds for offering the resolution. It had been brought about by four or five years of continuous work. It was very easy in a city to keep a society together, but scattered over eleven counties it was a very difficult matter. They had brought the resolution up for the purpose of getting some advice, also for the purpose of explaining how the motion had been made to adjourn *sine die*.

Dr. Hart thought, from the wording of the resolution, that the society was divided against itself as to the advisability of disbanding, as they had laid it over another year. He thought that in large cities, while the proportion of dentists was larger, they did not get along any better than in smaller places ; the burden seemed thrown upon a few the year before, when it had been suggested that they vote an easement to the State society. It had been shown how much better the First district society could afford to pay. That society had contributed to the law committee, to the New York College, and to other objects. Then too, the Fifth district society was in arrears for the last years dues. He thought the resolution should not be received and placed in the minutes of the Society.

Dr. Colby said a motion had been made at their last meeting that they adjourn *sine die*. Afterwards they held an adjourned meeting. It was only through the efforts of Dr. Rich and himself that they had not become defunct as a society. There had been a strong element at that meeting favoring the discontinuance of the society, and they had only compromised it in a way that would hold it open until this session, that the matter might be brought before the State society for advice and counsel. They did not want it thought that they had been protected in the Fourth district. They had not been protected there. Men practiced dentistry in defiance of all law.

Dr. Barrett wanted to emphasize the view taken by those outside of the society. They had learned the peculiar circumstances of the Fourth district society and had paid all honor to the faithful few who had labored to keep that society alive ; but when the dentists of eleven counties came up and complained that they had not received protection from the Law committee, they should be reminded that the chief efforts of the Law Committee are due the people who pay ; and the districts which paid for such services had the committee's principal care. Then again it was easier to prosecute in a city, where testimony could be easily obtained. He had served on the Law Committee at the commencement, and no suits had been begun until all were dead sure there was no chance of failure. It was easy for the Law Committee to incur defeat in this sparsely settled district, and as a consequence fail in the prosecution of illegal dentists, and make the law nugatory. His motion was that the matter be received by the society and turned over to a special committee, giving that committee an opportunity to formulate a plan by which the Fourth society could be strengthened and its co-operation secured. Suits should be brought only in counties where the committee had the support of the dentists.

Dr. Nellis wanted to know if it wouldn't look bad for this society to withdraw from the State society ?

The President said the society in question could not withdraw even if it would. The doctrine of State rights had no place in New York's dental system.

Dr. Jarvie did not mean to take exceptions to the report ; he sympathized with the few in the Fourth district, and the difficulties they had labored under in large territory and scattered population. It seemed to him that the Fourth society should not have adjourned *sine die ;* but that live members should have got together and contrived some way to interest their neighbors. He believed it could be done. They had the sympathy of the State society, which would do what it could to assist them. What he had taken exception to was the wording of the communication. They adjourned *sine die* because they had not had sufficient protection. According to Dr. Rich there had been two or three cases reported to the Law Committee, and one had been attended to. In Brooklyn they had had numberless cases where men had been reported, but it had not been deemed wise until recently to touch any of them. The committee could not run all over the State. They had been taking case after case in New York, until now they had covered the whole law ; had decisions covering very important points. One decision had come from the Supreme Court. Thereafter when a case was taken before another judge he would simply listen to the evidence to prove that the person had been practising illegally, assuring conviction at once. He thought the committee had acted most wisely in taking only those cases that they were sure of ; it had been less expensive and the law had been established.

The whole matter was then referred to the Committee on By-Laws.

The degree of M. D. S. was then ordered conferred on the successful candidates.

Dr. Curtis moved the appointment of a secretary *pro-tem*, as Dr. VanWoert felt a little delicacy about signing his own diploma. The chair questioned this proceeding for the simple reason that the candidate had been passed upon by the Board of Censors and the diploma signed by the members of the Board, and President and Secretary of the Society as such. Dr. VanWoert, and Dr. VanWoert, Secretary of the Society, were not of necessity one and the same person.

Dr. French said five had passed the examination, but four had been so anxious to "Carry the news to Mary," or somebody else, that they had greased their heels and slid. Dr. VanWoert was the only one on hand, and the speaker thought he should stand the honors. He did not think they should confer even a hard earned degree by proxy.

Dr. Walker hoped the degree would never be conferred by proxy. If it was worth a man's time to come up and be examined, it was worth his time to remain and have the degree conferred upon him by the officer elected to perform that duty.

Dr. Straw asked whether the degree could be conferred upon a person until he has signed the obligation.

The President said it could be, but should not by the present administration, unless by direct instructions from the society.

The degree of M. D. S. was then conferred upon Dr. F. T. VanWoert by President Line.

Adjourned till three P. M.

FIRST DAY.—AFTERNOON SESSION.

Dr. Jarvie moved the appointing of a committee of one Censor from each district to report to the Society applications for permanent membership.

Dr. S. B. Palmer, of Syracuse, read a most carefully prepared paper on "Matter and Force in the Oral Cavity."

Dr. Brockway could not allow the opportunity to discuss this paper pass without a word of remark. It seemed incredible that the statement made by the essayist, and received without wonder by those about him, that only sixteeen years before this doctrine had met with little credence. It seemed now to be accepted without dissent, and it also seemed to him that the doctrine as set forth and explained so clearly in the essay in question was one of incalculable benefit to the practitioner of to-day. When they looked back and saw that many of their operations had been performed in what might be called the densest ignorance of this law of electro-chemical action, they could appreciate, in a degree, the advantages of the present as compared with that period. When they thought of the interminable discussions in regard to forms of gold best adopted to preserving the teeth; the controversies, the heart-burnings, the bickerings, which had resulted from the claims to superiority of one material over another for saving teeth, and saw that they had all lacked knowledge of simple and expressive law to save them from this groping in the dark, they could then realize the obligations they were under to the investigations of such gentlemen as Dr. Palmer and his confreres, who had done so much to enlighten them and to relieve them from the depressing responsibilities they had felt in serving those whose misfortunes they sought to remedy by giving them better service. He would not stop to go into detail in regard to the application of the doctrines so set forth, but merely express his own sense of obligation to the essayist.

Dr. Jarvie did not pretend to know enough about electro-chemical action to take any part in the discussion of that point, but was impressed with the fact of the presence of acid in the mouth as the cause of this electro-chemical action, this acid being a product of fermentation of food about the teeth. Whether the electro-chemical theory were the correct one as to the cause of decay, or whether they thought, with Dr. Miller, of Berlin, that the germ theory was the correct one, the prevention of decay of the teeth remained practically the same, whether the one or the other theory prevailed. In other words, absolute cleanliness would prevent either electro-chemical action or germ growth and development, and in order to preach freedom from decay of the teeth they had but to preach cleanliness.

Dr. Curtis asked whether tin would deterioate when confined in a cavity under a gold filling, as it would when exposed to the saliva.

Dr. Palmer said it was only where the tin was exposed at the cervical borders that he had found it unreliable. Amalgam did better and was not so much affected by electro-chemical action.

Dr. Line asked: Assuming neutral secretions in the oral cavity, what combination would the essayist use—in the one case to effect an alkaline reaction and in the other case an acid reaction?

Dr. Palmer had not attempted to produce one effect or the other. One could not do either, though both were produced in their turn.

Dr. Rhine had opposed the combination of tin and gold, not from a scientific point, however, but from the bad effects he had seen in cases in his own practice. For many years he had used amalgam instead of tin, but had never seen any such results from the use of amalgam at the cervical border. If the amalgam was inserted in a very plastic condition the gold should be used very thin. It united so perfectly that it was impossible to tell where the amalgam left off and the gold began. It had made, in his hands, one of the most satisfactory of operations.

Dr. Greene presented "A New Departure in Crown-and-Bridge-Work." He thought he had found bridge cases in use chiefly as substitutes for the second bicuspid and first and second molars, and it had been his observation of work taken from the mouth, and also of work examined in the mouth, that failure had resulted from poor adaptation of the crown to the neck of the tooth. He had studied this matter carefully in cases of his own and others, and concluded to proceed on an entirely different plan from that in common use. Differences would be found in the forms of teeth, but the general form, for instance, the lower first bicuspid, would be more or less bell-shaped—in other words, large at the grinding surface and small at the neck. In grinding the crown to such extent as to get the cap to fit the neck of the tooth, much tooth substance had to be ground away.

Another difficulty met with was where little depressions were found at the cervical wall, a point at which finish of fillings should be as near perfection as possible. Instead of covering these holes, the crown would bridge them, leaving openings or depressions in which food would accumulate and decay begin. He thought it better, instead of grinding the tooth to the gum, to cut only part way. The gold would hug the tooth and not be out of sight, and polishing tape would give a continous surface. It was his experience that where caps had been put on to that point only, it was the last point for decay to begin. If one had the crown always in sight, it would simplify things very much, and add to to the durability of the work.

In crowning a molar, one would find nearly the same condition of things as in the bicuspid, except that the depression at the neck of the tooth would be much greater.

In the plan he had adopted in fitting crowns to teeth that were proximal to other teeth, instead of capping down between the teeth, he capped just above the point of contact with the other tooth, and then with a polishing tape shaded to a smooth surface with little or no chance for food to lodge. They would often meet with cases where the teeth were larger at the neck than at any other part. The main thing was to carry the crowns to, not beyond, the larger circumference of the tooth.

Dr. Straw said Dr. Green would find his (the speaker's) molars capped in that way. Sometimes he gave the patient to understand that he was going to grind until there was but a very small portion of the tooth left, and then he ground to his entire satisfaction. If the patient would stand it, one could grind so as to have parallel sides all the way down. He usually allowed the patient to wear the crown a day or more, then took it off and readjusted perfectly. If the thing was done heroically there was no reason to fear bad results.

Dr. Curtis asked Dr. Green if he had had any trouble from disintegration of the cement used in filling the crowns.

Dr. Green said he had had just such trouble, and, moreover, did not think there had ever been a crown put on where one did not.

The President said that as Dr. Ritter was not present, they would listen next to the report of the Committee on Practice.

Dr. Rosa read the report, which was received.

Dr. Rosa read a supplementary report; also a letter from Dr. Herbst, dated Bremen, April 26, 1890, and presented some specimens of gold fillings by the Herbst method, by the author; also extracts from an article in the Transactions of the American Dental Association, by Dr. Herbst, on "Glass as a Filling Material."

On motion of Dr. Curtis, the supplementary report, letters, etc., were accepted.

Dr. Straw thought it no more than right that the Society should extend its thanks to Dr. Herbst for the exhibits, and so moved.

Dr. Curtis said it had cost Dr. Herbst a great deal of time and money to prepare these specimens for the Society, and he thought he had been stimulated by the kindness shown him while in this country two years before. They were indeed excellent specimens of work. Previous to his visit to America he had found that his fillings were continually pitting and becoming rough. He had not known that the heavier foils could be used and this difficulty obviated. He had now shown what he could do with the heavier foils.

Dr. Jarvie supposed it was understood, in giving this vote of thanks to Dr Herbst, that it should be signed by the proper officers. He would like it to state that they had heard from him with great pleasure, remembered his visit with a great deal of interest, and should be glad to hear from him again.

The motion was carried unanimously.

Dr. Butler would not enter into any extended discussion of the report of the Committee on Practice, but would like to commend the committee for the censure, if it could be so-called, that had been put upon unsightly bridge work. He thought it evidence of the time when this unsightly practice would disappear forever.. They had gone to extremes, sometimes, which were hardly justifiable.

As to the method of combining alloy with phosphate of zinc fillings, he had not done anything with it, but had used alloy in connection with gutta-percha, and with very good effect.

About a year and a half before, it had become necessary for him to build up some first permanent molars for a lady. He could think of nothing adapted to those cavities but gutta-percha, and that would very quickly cut out. He had finally filled the cavities with gutta-percha, placing on them a drop of chloroform to dissolve the surface, and worked in an amount of finely ground alloy, leaving a perfect metallic surface. This material had been worn for more than a year, and he could see very little effect on the gutta-percha. He had tried it in proximal cavaties, using the matrix, with very similar results.

About four years before, a clinician had put two fillings in his teeth by the Herbst method. He looked upon them as a failure. He could appreciate the fact that they had been put in at a clinic at a dental meeting, and knew that a man worked at great disadvantage at such times. He was glad Dr. Herbst was still preservering, and that in his hands the method promised success.

Dr. Evans could see no reason why shameful pieces of bridge work should exist with the advanced methods for inserting such work. In reference to the accepted plan, all that was now necessary was to cut the crown off instead of mutilating it, and back with platinum ; and if it was desired to make them removable, insert in the root canal, and face with a piece of gold, carrying the piece to the tooth for an anchorage, crowning that tooth also, either with platinum or gold. Platinum was preferable to gold as it showed less in the month, especially in the case of a public speaker. He used 30 standard gauge where he wished to make a cap this style, the gold all on the inside.

Dr. Straw wanted to hear from Dr. Stockton upon this or some other subject.

Dr. Stockton did not know that he had anything particular to say on the subject before them, further than that he had not, for some time, believed especially in bridge-work. There were some cases where it could be used to advantage, but when a plan had been discovered by which well fitting plates could be made, it was better to do that way.

If they would allow him to branch out he would say something as a visitor, and would have to say it then as he was about to take a train. In New Jersey they had taken a new departure in laws regulating the practice of dentistry. They had had a law by which any one could commence practice who had passed the board of examiners. Then later another law that no one could commence practice unless graduates of college ; later still an attempt had been made to obtain a law empowering the examiners or a majority of them to confer a degree similar to the one in N. Y. State. This had been thought by some unwise and therefore met with defeat. Now they had a law by which no one could commence practice unless a graduate and passed by the board of examiners.

He wanted also to emphasize the fact that they did not have holidays enough ; all were too closely identified with their offices and business. One had a practice of $5,000 a year ; what was he worth ? $100.000. That was perhaps much more than some of them would bring at auction, but that was what they were worth, taking their income as five per cent. Few men had a practice of $10,000 a year. Do they who have realize that they are worth $200.000 to their families ; did it not become them to be a little careful of their health ? Strike for eight hours only. Their eyes were of too much importance that they should tax them ten or twelve hours for the money received. Charge more and work less.

There was another thing that he wanted to speak of : Chicago had fairly beaten the East in the race for the World's Fair. New York should have had it ; everybody in this region would have had it there only, but Chicago had got it. He wanted to strike the key-note then and there and let Chicago have the grandest, the best, the biggest and the most glorious dental meeting ever had in this country, and under the auspices of the American Dental Association,—the oldest organization in America. He hoped they would initiate a movement that would make the meeting at Chicago one of the best meetings ever held. He did not care whether it was a part of a congress or a part of something else, or what it might be called, but wanted a meeting of dentists in Chicago that would give an impetus to the profession and make dentistry better known.. Had they never thought that it was easier to pick a man up than to knock him down? Many were apt to pick flaws in a man's character. They could make this meeting successful by one method or another. They could also make it a failure. Throughout this state and all states, let them strive to make this a great meeting, and they would do it. He urged them remember when at home, that they were to have a grand meeting 1893 at Chicago, and that it would be a success.

He wanted also to give them a good thing. He had used it in his own practice and knew it to be good. He had been using the electro-deposit plate, and could give it his unqualified endorsement as meeting a want that had long been felt. These plates fitted the mouth better han anything ever before devised; they were metallic throughout.

Dr. Curtis said the report accused the Correspondent of intruding upon the Committee on Practice—that the two could not together do more than one. The work of Dr. Herbst had come to the Correspondent. If the Committee had thought Dr. Herbst worth corresponding with they could have found out what had been done in Germany, and perhaps got many valuable points. He had, too, about a thousand letters in connection with his office. He would report next day and let them judge whether any good could be made to come of the position of Correspondent of the State Society. As Correspondent of the Society he had had a duty to perform that the committee had not.

In reference to that part of the report dealing with nitrous-oxide, it was harmless in every way. It had advantages over other remedies in that it did not freeze the parts, was not combustible, and could be applied in the most gentle manner possible. They could destroy all sensation in the gums and exterpate pulps without pain, and it would produce the same effects as in general surgery where its value was not well known because but little used.

Dr. Van Woert said Dr. Ottolingui had not found fault with the Correspondent, but thought the reports might repeat each other. In last year's reports they would find many things mentioned in common. That the Correspondent had encroached upon the Committee on Practice was not meant, but simply that they had doubted the matter.

Dr. Rhein said his object in bringing chloride of methyl to notice was to introduce what he had thought a most serviceable thing. If others could produce better results with nitrous-oxide, he would be only too ready to abandon the chloride of methyl. He had been using chloride of methyl for a year and was better pleased with it than ever.

Dr. Stockton asked Dr. Curtis if he had ever experienced pulp trouble from nitrous-oxide.

Dr. Curtis answered that he had not.

Dr. Stockton said there was nothing, perhaps, more cold than nitrous-oxide spray, and it seemed to him that the pain must be great and the danger to pulp structure extreme.

Dr. Curtis did not use spray. It was just the drying influence of this cold-blast-process of dehydration.

Dr. Line said it would seem to be a question of dehydration or freezing. If that were the case, why not use atmospheric air or carbolic acid gas? Either would dehydrate or freeze, according to the pressure under which the gas or vapor was applied, and the quantity of water contained in the part subjected to the blast?

The resignation of Drs. Woodruff and Melotte were accepted.

The President appointed on the Committee on Nominations to permanent membership Dr. Candady, in place of Dr. S. D. French, deceased.

Adjourned to eight o'clock, P. M.

FIRST DAY—EVENING SESSION.

The meeting was called to order by President Line, and the minutes of the morning and afternoon session were read by the stenographer, and approved.

W. R. Lansing's bill as stenographer, $68.50, was referred to the Committee on By-Laws.

Dr. Straw, of the Committee on Prize Essays, reported that three essays had been presented, all of which had evidently been prepared with much care. The committee reported in favor of "Nutrition" by Dr. W. C. Barrett. The report was received and the prize awarded Dr. Barrett.

"Comparative Dental Anatomy," by Dr. Barrett, came next in order. He had not prepared a formal paper, and would therefore speak on the subject in a general way, illustrating his remarks as far as possible by means of a few skulls picked up the day before in Rochester. He had endeavored to have his own collection an hand, but somebody or something had failed him since leaving home, and the box had not arrived. He would do the best possible under the circumstances.

Among other things, they had prided themselves in being a scientific body. They should have their wind bag prodded, the wind let out, and fact put before them. Were they scientific men, or were they not? He did not desire to ridicule dentists, because he was one himself, and yet he would like, if possible, to stimulate all to a higher standard, that they might become what was undoubtedly their privilege—scientific. They were not a scientific body; he scarcely knew of a dentist in the United States who was worthy of being classed as a scientific man. He did not know of any truly scientific work done in dentistry in our own country.

By scientific, he meant true, pure science, not technology nor applied science. They might set in motion some pathological ideas, and that might be scientific but as soon as they studied it with a view of applying—it became professional labor. They had done much professional work, had studied and applied their knowledge, probably as closely as any other professional body, but to say that they had studied science—they hadn't. They might well look it in the face and consider what was due the world, they who had assumed to be scientific, but who had merely cultivated one portion of a particular field. They had studied the filling of teeth, the making of plates, and the putting in of crown and bridge work, but that was not science; it was simply professional work. Couldn't they do something beyond that?

The subject proper was then taken up and discussed in great detail. References to the skulls were so frequent that neither outline nor abstract could give even a fair notion of the facts brought out without illustrations, which it is hoped will appear in the Transactions.

It should be said in this connection that the collection which the speaker had hoped to use came the next morning, too late of course to serve its purpose.

Dr. Jackson presented "A method of applying springs for the purpose of regulating teeth, without the use of plates," illustrating by means of drawings, models and appliances. As in his predecessors case, cuts are necessary to a correct understanding of a subject that by this particular method Dr. Jackson has made peculiarly his own.

Dr. McDougall read a paper entitled "Relation of Dentist and Patient."

The President announced the next order of business as the election of officers. He appointed as tellers Drs. VanVleck, Candady and Smith.

Dr. W. W. Walker, New York, was elected President.

Dr. G. L. Curtis, Syracuse, Vice-President.

Dr. F. T. VanVoert, Brooklyn, Secretary.

Dr. H. C. Mirick, Brooklyn, Treasurer.

Dr. R. Ottolingui, New York, Correspondent.

Drs. Holmes and Southwick were re-elected Censors.

For censor for the Third district to fill out the unexpired term of Dr. S. D. French, deceased, Drs. Baxter, of Albany, and Wright, of Troy, were nominated. Dr. Baxter was elected.

Dr. Jarvie, of the committee to nominate permanent members, reported Delos Palmer of the First district, F. C. Walker of the Second, E J. Young of the Third, S. C. McDougall of the Fifth, and R. H. Hofheinz of the Seventh.

The report was received, and the gentlemen named were duly elected permanent members.

Adjourned to 10 o'clock of next day.

SECOND DAY—MORNING SESSION.

The minutes of the evening session were read and approved.

The Committee on By-Laws made a brief report, following which Dr. Mirick said that in his report he had recommended remission of dues of the Fourth district society for a couple of years. He renewed that recommendation, even though the Committee on By-Laws had suggested otherwise. The Society was in arrears forty-eight dollars and that was quite a little damper on them. He thought the Society should remit these dues and give the Fourth a fresh start.

The motion was carried and the dues of the Fourth were remitted to date.

The President said the report of the Commitiee on By-Laws had been accepted, but a recommendation therein called for further action. He suggested that the chairman re-read that much of the report.

Dr. Hart read in substance that, "Inasmuch as the Society was indebted to the chairman of the Law Committee in excess of its resources, that a partial payment of five hundred dollars be made as soon as that sum was in the treasury, and that the balance be paid from funds to be collected from the registered dentists of the State."

The recommendation was adopted.

Dr. Straw, of the committee on resolutions in regard to the late Dr. S. D. French, reported the same, and on motion they were adopted.

Dr. Starr showed a novel dental splint. It was a little arrangement to hold a superior central which had become loose as a result of pyorrhea alveolaris. He had simply burnished thin gold around it and adjoining teeth, turning the tips over the edges, and in some places into superficial cavities, fixing the whole with cement. He thought this better than to subject the patient to cutting away of the tooth. When the teeth had got well the appliance was easily removed and the teeth not disfigured. He also exhibited a flexible separating file, which it was claimed had all the best qualities of one well tempered.

Dr. MacDougal described a case of congenital cleft palate, and exhibited the apparatus contrived to meet the necessities of the case.

The Secretary presented the bill of the Committee of Arrangements, $68.00.

Dr. Mirick thought the item $50 for the rooms should be shared by the dental depots represented. He did not know what arrangements the committee had made, but presumed it could be explained.

Dr. Wright said the committee had been guided by the resolution introduced at the previous meeting, which had instructed the committee to secure a hall with better acoustic properties, and more free from street noise; also with adjoining rooms, or a main room large enough for dental exhibits. Acting on that resolution, the committee had visited all the halls of Albany, and the present was the only one that would comply with the requirements.

Dr. Mirick said it appeared to him that the committee had been a little slack in not looking a little more to the interests of the Society. The dental depot gentlemen should certainly pay something for the use of rooms.

Dr. Wright said their paying anything was not mentioned to the committee ; they had been instructed to get the rooms.

Dr. Barrett wanted to know if the committee had given the dental depots authority to occupy the rooms.

Dr. Wright said the committee certainly had.

Dr. Barrett asked by what authority.

Dr. Wright answered by virtue of the resolution of the year before.

Dr. Walker called for the reading of the resolution, which was read by the secretary.

The President then suggested that the matter be referred back to the Committee of Arrangements, and as there was no objection it was so referred.

Dr. Rosa said the chairman of the Committee on Practice desired to publish the report in a periodical of his own election, and as there was no objection permission was granted.

Dr. Hart read a paper on—" Diseases of the Antrum."

The President said that, inasmuch as Dr. Edmund's paper was on a somewhat similar subject, it had been suggested that both papers be read and then discussed together

Dr. Edmunds then read a paper on—"Rubber Dentures and Amalgam Fillings as Special Causes of Puruloid Engorgement of the Antrum."

Dr. Brockway thought the placing of two papers on two distinct subjects, side by side, made criticism of either somewhat difficult for a person commenting on one paper as distinguished from the other. He had no particular views on the subject of rubber dentures, so would leave that for others to speak of ; but he did enter his protest most decidedly against the views expressed by one of the writers in respect to amalgam fillings. He had failed to see in anything that had been brought out, a single evidence of the truth of the charges he had made against amalgam fillings. He had been in practice many years, and had heard this old charge against amalgam for its deleterious effects, brought up and re-hashed and worked over for years. For a good many years he had shared all the prejudice of the writer, but did not then, and why? Because he had looked and had failed to find a single bit of evidence of injury from amalgam *per se.* He had heard of thousands of cases and had seen hundreds, of abcessed teeth where amalgam fillings had been in the mouth; but had seen nothing to prove that the teeth would not have been in as bad a condition if any other filling had been used. It amused him to hear anyone speak of treating ulcerated teeth a year without a cure. He would not continue the subject further except to reiterate the protest he had made against the charges against amalgam. He regarded amalgam as one of the most valuable materials the dentist had to use, aud as far as he had been able to see, it was as harmless as anything could be.

Dr. Hart understood the essayist to make the statement that the absorption of the mercury through the tubuli caused the death of the pulp. He did not know that mercury could be so absorbed. He might be mistaken. He thought botch work with amalgam would lead to bad results, but considered it unfair to condemn any material because the work done with it happened to be unsatisfactory. Gold fillings or gold plates in bad hands would prove equally unsatisfactory.

Dr. Edmunds, the essayist, said the oxide of mercury when taken through the tubuli of the teeth caused an irritation of the pulp which resulted in its strangulation, and there was then a dead pulp which must necessarily result in an abcess.

Dr. Barrett wanted an explanation as to how mercury in any form could get into the circulation through the dental tubuli? He should as soon expect it to get through the laminæ of the finger nails.

Dr. Edmonds explained that the dentine was composed of tubuli and the oxide coming into direct contact caused irritation.

Dr. Curtis thought the questioners had better quit. They were taking up a great deal of time, and when the essayist had opportunity to look into the subject a little he would probably take back much of what he had said.

Dr. Rhein did not rise to discuss Dr. Edmonds' paper, as he agreed with other speakers that its discussion would prove an idle matter. At the same time, assuming Dr. Edmonds' diagnosis to be correct, it gave him no reason for the deduction. It was a great mistake to pick out an isolated case and then write of troubles as generally proceeding from such cause.

As to Dr. Hart's paper, he thought it worthy of special commendation for the clear manner in which the essayist had presented a very interesting subject. There was one form of another trouble on which he desired to say a word—inflammation spreading through the Schneiderian membrane. It was a very common thing for a cold to extend to the antrum and produce the most intense pain. He had found treatment very simple—using the chloride of methyl. An application of cotton over the region of the antrum, saturated with the chloride of methyl, relieved the engorgement. Sometimes the difficulty could be entirely abated by antipyrin.

Dr. Edmunds referred his critics to Piggott's Chemistry where the symptoms of these cases were clearly set forth and which showed the pernicious character of the material used. No one could measure the effect of what he was adding to the system. It might enter as an insoluble salt and be set free by iodide of potassium.

Dr. Barrett called attention to the fact that Piggott's Chemistry had appeared somewhere in the forties and was therefore somewhat ancient to quote as authority for to-day.

Dr. Edmunds said the action of mercury had not changed since the forties.

Dr. Atkinson said free mercury had never poisoned any one. They had jumped at conclusions, laying it down as solemn doctrine. To be effective mercury must be combined with something else—become a salt of mercury. Arsenic alone was safe, but when combined might prove dangerous to fool with. So far as the action of red rubber was concerned, it had been settled by all examinations of it that the results were negative.

Dr. Barrett read the prize essay, "Nutrition."

Dr. Straw had only to say, as chairman of the Committee on Prize Essays, that the paper needed no discussion, but to be taken home and studied.

Dr. Atkinson had to say that the paper started wrong in its discussion. They had as yet no sufficient syallabus of first principals to enable them to start with fact built upon fallacies. There was no such thing known as simply and purely nutrient. The simplest food was inorganic. How does it change to the organic? They had a molecule spoken of in this paper that there was no term for. He knew of no $Hg^2\text{-}Cl^2$. He did know, however, of $Hg\text{-}Cl^2$. $Hg\text{-}Cl^2$ was bichloride of mercury or corrosive sublimate. There was no combination known as $Hg^2\text{-}Cl^2$ as a molecule. They had an amount of combination, but never in the first step from simplicity to duplicity. The paper impressed him with the idea of fighting valorously with the ability to stimulate, but without the ability to go through the process of talking of the radients. He would not object to "pabulum," had foundation principles been referred to. Much feeding, without good digestion, did not produce wholesome mental or bodily pabulum. It was not evidence of a large mind or great mental activity, but of inability to discriminate between molecular changes. That was the reason he had advised them not to worry about an object to digest, because if they would take a perfectly digestable substance—what was beautifully called a proximate principle—and inject it into a famishing body, it would be digested without excess or debris. The process of feeding was simply taking what was needed into the system. They must be perfectly free before they could accept his earnest peroration about becoming scientific. Let the essayist become scientific; let all of them become scientific, and show knowledge of how the changes in question take place, then they would be better able to discriminate between food, drink and poison.

Dr. Barret said they had listened a great many years to the sounding generalities of Dr. Atkinson, and had been intoxicated by his verbiage year after year without one of them really knowing what he meant. He had assumed that other men were ignorant, and by implication that he was the only man in the dental profession who could discourse on a subject intelligently. All others were ignoramuses. He had not altered or controverted one single principle; he had not combatted a single idea, but had given them mere verbal symbolisms without the slightest meaning. The only possible point that he could see in that world of words upon words—that incoherent concatenation of words—was that there was no such thing as $Hg^2\text{-}Cl^2$. He said that there was, and he thought his word as good as Dr. Atkinson's. He did not assert that the others did not know anything, but did assert that he was not the only man who did not know something. He did not assert that he knew it all, but what he knew he knew as well as any one, and those things in question he did know.

It was a fact, and he appealed to their good sense if it was not a fact, that it was only the vegetable that could organize the inorganic; that an animal had no power to organize the inorganic ; that it must take matter after it had been organized, and that the first organization was by the vegetable world. The first organic materials which existed upon the earth were the lower forms of the vegetable. Before this world became fit for the sustenance of animal life it must have been prepared by the vegetable. He most seriously and earnestly objected to any man getting upon this floor with a sounding mixture of terms, which were mere words, and their permitting such mixture to question in their minds the settled principles of science.

Dr. Atkinson asked if the animal would assimilate oxygen?

Dr. Barrett said he was not going outside the paper. He then read his preamble in which was set forth what he had desired to bring forward upon the points in dispute.

Dr. Hart called up the Committee of Arrangements matter, reading the resolution of '89.

Dr. Barrett said that showed the authority he had asked for ; the responsibility rested with the Society, and not the committee.

Dr. Wright said the committee had received letters from manufacturers and dealers asking—"Have you rooms;" because in the circular sent out by the Secretary it said—"Apply to the chairman of the Committee of Arrangements." His reply had been that according to the resolution of the Society they would have room for all who chose to come. Could they have done otherwise?

The report was received and filed and the financial part referred to the Committee on By-Laws.

Dr. Jarvie said some recommendation should be made for the future. There had been some discussion as to the desirability of having goods shown while the meeting was in progress ; it seemed to detract from the interest in what was going on in the session room. To test the feeling of the members, he moved that that part of the instructions giving room to the exhibitors, be stricken from the resolutions. The motion was carried.

Dr. Hart said the Committee on By-Laws had a communication to make on the charge of $50.00, for this room. They recommended its payment, but thereafter accommodations to dental exhibitors should be charged for. They had found the Treasurer's affairs correct in every particular.

On motion the report was accepted and all bills ordered paid.

Dr. Jarvie moved to appropriate $100 for the secretary. Carried unanimously.

Dr. Curtis, the Correspondent, said it had got so late that he would not read his report, except by title.*

The report was referred to the Committee on Publication to be put in its proper place in the Transactions.

The Committee on Publication asked for advice as to the number of copies of Transactions to be issued.

On motion of Dr. Barrett the subject was referred to the Committee on Publication with power to act.

Dr. Starr read a telegram from Dr. Nearing, one of the clinicians, which said he was unable to be present; also one to the same purpose from Dr. Retter, one of the essayists.

Dr. Starr moved that Dr. Retter's paper be read by title and published. The motion was carried and Dr. Retter's paper so read.

The President appointed Drs. Straw and Curtis, an ex-president and the vice-president-elect, to conduct the president-elect to the chair.

President Line received the president-elect in due form, introducing him to the society as its principal officer for the ensuing year.

President Walker said the time was very limited, and as had been suggested, they were ready to adjourn to catch the train and go to their homes. He would make his speech early in the meeting of next year. Appointments of committees for the next annual meeting were then made and the society adjourned.

DESCRIPTION OF THE METHOD OF SETTING UP THE APPARATUS, THE NECESSARY ARRANGEMENTS TO BE MADE, AND THE USE OF THE VARIOUS APPLIANCES IN PHOTO-MICROGRAPHY.

BY DR. RODERICK ZEISS, JENA.

[TRANSLATED EXPRESSLY FOR THE ODONTOGRAPHIC JOURNAL.]

I. THE SETTING UP.

In regard to the choice of the room which is to serve as a laboratory for photo-micrography, two points should be especially considered:

1. It should be as quiet and commodious as possible, and carefully guarded from any shaking of the floor. I have purposely

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*See page 63.

located my laboratory, like Benecke,* on the ground floor of a house otherwise unoccupied, and have set up the apparatus on two stone slabs let into the floor.

The planking of the room is not at all in connection with the base ; I can even walk about in the room during the exposure, without shaking the apparatus in the least. Where so careful a grounding is not provided, and the rapid operation of the dry plates makes it unnecessary, success will be dependent, at least as far as the avoidance of agitation must be considered, upon the choice of a room as quietly situated as possible, and then upon the exercise of all possible care in moving about within it.

2. The room must afford the possibility of placing a heliostat at a window of the south wall. The heliostat will be most advantageously set up on a stone slab built into the wall ; a corresponding console will suffice, however, of oak or iron, fastened at the window at the height of a table, by iron braces, on which is marked each position occupied by the heliostat at the last testing.

The windows of my room are fitted with darkened slides (light wooden frames with packing cloth and black paper drawn over), the one at the window with the heliostat having only a small opening which can be closed by pasteboard, for the pencil of rays issuing from the heliostat. Admission to the dark room is through a double sliding door, of like kind, an arrangement which permits the plate holders to be reached out of the dark room without from time to time illuminating the same.

The position of the photo-micrograpic apparatus in the laboratory should be so selected as to be conveniently accessible on all sides, and such that direct sunlight as well as artificial light can be employed. Its best position is therefore about 1–1½ Mtr. from the south wall, and of course in such a manner that, its optical axis, with that of the heliostat, being horizontal in the room, the pencil of rays forms a right angle and can be intercepted by the plane reflector placed upon the optical stand, and be directed into the microscope.

The insertion of this reflector has, in preference to direct illumination through the heliostat, the following advantages :

a. The electric arc lamp, set up on the microscope-table in the final adjustment of the optical axis, can by this means remain in its place while sunlight is being employed ; in a direct adjustment of the heliostat, it would become necessary to remove the lamp, and its removal and re adjustment always require minute care and much time

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*Dr. Berthold Benecke: Die Photographie als Hilfsmittel mikroskopischer Forschung, 1868, Braunschweig, Verneg & S.

b. The slight error which occurs in the working of the heliostat itself, even with the most accurate setting-up, can by this reflector, which has delicate micrometer adjustment in horizontal and vertical axis for that purpose, be compensated, during the microscopic observation, from without (a happy arrangement), which commends itself in those cases where the electric lamp is not to be taken into consideration.

Should gas or petroleum light be employed, by the removal of the reflector the lamp used can be placed close to the electric lamp.

Before the definitive adjustment of the apparatus, it is necessary, first of all, to set the heliostat in place, in order to bring the height of its reflector in unison with that of the axis of the camera. The adjustment of the heliostat admits of no change, accordingly the feet of the camera must be adjusted in length by means of screwing upon corresponding small wooden blocks.

Now follows the setting up of the microscope-table in such wise that the optical axis of the microscope standing horizontal to it, shall be on a level with the pencil of rays issuing from the heliostat, and at right angles thereto, and that the rays shall be intercepted by the reflector at the lamp end of the optical stand. The camera stand should now be so placed as to allow the camera, which moves on rails and rollers, to slide up to the tube of the microscope, and enter the light lock of the tube, (described on page 7) without touching. By consulting the representations at the end of the book, of the setting up of the apparatus (Plates XII and XIII), it can be accomplished without difficulty. The testing of the adjustment is simple; it consists merely in intercepting the beam with the mirror and directing it into the optical axis of the microscope not yet fitted with its lenses; a spot of sunlight shows itself exactly in the center of the ground glass, as large as the opening of the tube.

The apparatus being now set up, and the arrangement for making use of the direct sunlight coarsely regulated, it stands ready for immediate use. The surest means of attaining the end sought will now be described.

The question, which objectives to choose for photo-micrographic work, is easily solved, since already so creditable a number of distinguished photo-micrographers have acknowledged the direct advance made in this department, through the construction of the apochromatics. While objectives of older construction have produced excellent results, especially in the hands of skillful operators, (Woodward's greatest successes with diatoms, according to his own statements, were achieved with a "Zeiss" $\frac{1}{21}$ homogeneous immersion of older construction), yet these objectives offer difficulties of various kinds, by reason of defects in accuracy, of which the apochromatics have happily relieved us. At all events, I have carried out my previously announced intention, of leaving out of consideration all systems which are not, like the apochromatics, approximately free from color traces of the secondary spectrum, and which in consequence of this have a more or less marked difference of focus in the different colored rays. Since hand objectives, to which the name "apochromatic," rightfully belongs, have not yet been manufactured by other firms, only the objectives, with the above mentioned characteristics, of the firm of Zeiss, can be taken into consideration, as regards the following explanations.

II. ON THE TECHINQUE OF PHOTO-MICROGRAPHY.

A photographic impression of a microscopic image is made, as is well known, by allowing the rays from this image to act upon the sensitive film of the familiar photographic plate, "exposed;" this latent action is made visible by certain chemicals, "developed;" and then made upou the plate, or "fixed." This work differs in no way from the manipulation practiced by every photographer, and is not difficult to learn, especially since the introduction of dry plates. I have therefore thought it necessary to take up these points but briefly in the following treatise. All the other difficulties show themselves in what is the great problem of photo-micrographers: the production of this microscopic image. This problem has two sub-divisions; one having to do with the illumination of the objects to be copied, and the other with the copy itself.

A. *The representation of the object.*

I. GENERAL PRINCIPLES.

In the representation of the object, the quantitative and qualitative character of the source of light, as well as the ways and means of bringing it to bear upon the object, are naturally important factors in the solution of our problem. If they had already a long known importance in ordinary microscopic research, where indeed the action of the iris of the eye has an effect to adapt it to the strength of the light, and the changing sensitiveness of the retina to compensate for the chromatic defects of the image, it is explained why in photo-micrography these considerations are of still more weight, the plate reproducing the image unmodified, just as it is. It is therefore easily understood that in this direction were my most earnest efforts made.

In general, that light source must be called the best, which in regard to quantity is adapted both to give the image sufficient clearness, and to illuminate the plate with sufficient intensity, and which in regard to quality is as white as possible. For slight enlargement artificial light quite suffices, and a white burning gas (Siemens) or petroleum lamp (the latter preferable on account of its steadiness) has been found to answer the purpose in obtaining good results. A high degree of enlargement renders the use of lamplight impossible, unless greater uncertainty in regard to the throwing up and too long duration of the exposure are desired, both which are calculated to impair the perfection of the results. Among artificial illuminators, both the arc light and magnesium light would be useful for the purpose, could they be employed direct, that is with a ground glass shade ; this is very difficult, according to my experience not practicable, because the white hot portion of the carbon points and of the magnesium thread, never remains at rest, but is constantly in a state of agitation, which renders both the throwing up and the exposure uncertain. Both these misleading illuminators are therefore better left out of consideration for high degrees of magnification, but are of the greatest importance for medium enlargements and likewise for the projectives of microscopic images for demonstration, where the defect mentioned is not an objection.

Guided by abundant experience, which includes nearly every imaginable light source—half as a matter of curiosity it may be mentioned that I have taken photographs by the white heat of a Seimens' glass melting furnace—I hold steadfastly to the exclusive use of direct sunlight for high degrees of enlargement, especially if colored objects are in question, in despite of the fact that dependence upon it is attended with much unpleasantness because of the changableness of our climate.

Opinions in regard to the application of the light to the object have only recently reached the much needed clearing up, after infinite confusion, and the sacrifice of an infinite number of plates as well. The experience of most photo-micrographers has led to the conviction that the best results are obtained if the image of the light source is projected as sharply as possible in the object plane, which naturally has to be accomplished by means of a system of lenses introduced in place of Abbe's illuminating apparatus, the latter not being perfectly adapted to that end. The construction of an illuminating system to answer the purpose in all cases, especially for illumination by direct sunlight, was proposed by Privy Counselor Koch and staff surgeon Dr. Plagg, and straightway came to nothing ; it was in the last year that an achromatic condensor system was manufactured by the firm only partly satisfactory, but it has been perfected by further experiments. In general, in the setting up of this system, the following three points are taken into consideration :

1. *The angle of aperture of the illuminating beam.*

Observations with the ordinary illuminating apparatus show what a great influence the angle of aperture of the beam thrown upon the object, exerts upon the condition of the microscopic image, and how differently this angle must be chosen, in order to get the most satisfactory image in all cases with different preparations. It is self-evident that these distinctions are of weight in the taking of photographs. In general, the closer the illuminating beam is taken, and the smaller the working aperture of the illuminating apparatus, the sharper and more distinct appears the image. For by the employment of a broader cone, there are of necessity entering rays of different degrees of inclination to the axis of the microscope, acting simultaneously—by the side of the quite axial rays of the central illumination, those of more or less considerable obliquity ; and the images produced by the entering rays of varying obliquity, from objects whose constituents fix their own boundary limits not by unequal absorption of light, but by differentiation in refracting power, are not identical, but in regard to distribution of light often considerably unlike. The image produced by a beam from a wide aperture is then undoubtedly the result of an indefinitely large number of different images superimposed one upon another (the single one being the product of many smaller ones depending upon the variations in the illuminating beam according to the lines of incidence of the different rays included in the broad beam as parts of a whole) and it is evident that in proportion to the increasing size of the aperture of the illuminating apparatus, must increase the indefiniteness and indistinctness of the image. As a matter of fact in the case of such objects as neither by natural or artificial color differences absorb the entering rays, very many differing only in the refractive power of their parts, almost complete disappearance takes place if one observes them by means of a beam from a large aperture, 1.0 numerically, for example. In addition to this, there speaks in favor of illumination by a narrow beam, the familiar circumstance that in the most carefully corrected microscope objectives, the image plane is always perceptibly curved, so that the image in the axis and that out of the axis (that is to say by the same exposure) do not simultaneously become sufficiently sharp. In photography this curve is of greater moment than in ocular observation, since the equalizing accommodation of the eye is wanting. The greater the angle of aperture of the illuminating, and thereby image producing beam, the more rapidly must the intensity decrease from the centre outward in a microscopic image projected upon a plane surface; the smaller also that part of the field in which is received an intensity approximately equal.

On the other side of the question, however, are three considerations which argue in favor of the use of the widest possible light beam:

a. The increased clearness of the image which it is evident attends the enlargement of the angle, and the especial illumination secured for photographing it on account of the length of exposure.

b. The diminution of the line of diffraction which in narrow beam illumination invests all the contours in the image and stands out more strongly, the more intense the light in use. These lines of diffraction (bent appearances of the reality of the object according to Abbe, of the shadow edges according to followers of Fesnel generally) interfere in a great degree with the distinctness of the image thrown by a very narrow, intense beam. For this reason, the direct illumination of an object by the sun (or the carbon points of the electric lamp) is entirely out of the question without the interposition of a condensor system, even for slight enlargements, where this simplest and most convenient kind of illumination in regard to clearness would be quite sufficient. In such a case a ground glass must be interposed (to diffuse the light, as the saying is) merely for the purpose of securing a considerably wider beam than that of ½°, supplied by the sun.

c. The enhancing of the differentiating power of the objective, which produces by central light an illuminating beam of wider angle, so that in it are included obliquely incident rays by the side of the direct central ray. The latter are capable of reproducing details which indeed the objective does not assure by the direct central light, as is clearly shown in the examination of diatoms. (An objective 0.8 nm. from the aperture, for example, allows the marking of *Pleurosigma angulatum* to stand out hardly at all under a very narrow central beam; but a beam about 0.3 numerical aperture, which includes oblique rays as far as about 20° of inclination, produces in nearly central light a quite distinct image of the marking.)

The last mentioned advantage of the illuminating beam from a larger aperture can be carried to an almost unqualified limit, if it depends upon the reproduction of stained objects or the stained constituent parts of such, in which the production of the image is based upon the effect of absorption. In this case there occurs, provided only that the objective be carefully corrected for its whole aperture, no obliteration of the image produced by an illuminating beam from a 1.0 or greater numerical aperture (so far as these absorbent elements are concerned) the simultaneous disappearance of the non-absorbent portions of objects being now no detriment, but rather an advantage. R. Koch, as is known, first taught how to rightly estimate the conditions in this case, which have become especially important for later microscopic investigation, when he brought into use and generally recommended central light with wide aperture for objects of the kind mentioned.

From all this it follows that a properly appointed illuminating apparatus for the purposes of photography must provide, on the one hand, for an illuminating ray of wide aperture—at least up to 1.0—and on the other must allow the possibility of diminishing this aperture at pleasure in a safe and simple manner, in order to be able to accommodate it to the nature of the object and other conditions.

No general rule can be laid down for this accommodation ; since it depends in different cases upon the judicious balance between opposing conditions. In the greater number of preparations (of colored objects, preparations of bacteria in particular), it appears, however, according to experience, that such an illuminating ray as issues from an aperture about one-third that of the objectives sometimes used, and fills with light about as far as one-third from the free opening of the objective, is advantageous both for ocular observation and for photography.

This ratio is controlled with perfect certainty, as is well known, by looking within the tube after removing the ocular (protecting the eye by the use of a smoked glass in illumination by means of direct sunlight), noting at the same time what portion of the free objective opening appears equally illumined by the entering ray.

The modification of the illuminating ray is accomplished most easily and conveniently by the help of an iris diaphragm in the condensor system as it has lately been supplied by the firm of Zeiss in place of the statives designed for ordinary work with the microscope.

This can be adjusted on the stand of the diaphragm holder of Abbe's illuminating apparatus like a cap and then fits advantageously the ordinary immovable shutter, thus affording the possibility of increasing and diminishing the opening in perfect gradation. By this means a very small aperture is obtainable of 1 Mm. and a very large one nearly equalling the diameter of the condensor system. In the achromatic condensor for photo-micrography this diaphragm is applied on optical principles to the condensor system.

Plates V–VIII illustrate at least one of the differences brought about by the employment of illuminating rays of unequal size in the admission of the photographic image.

Both the associated views in Plate V, of Pleurosigma Angulatum, show this with sufficient clearness, since the impression of these two images in regard to the smallest details, must be pronounced a success, agreeing with the original print in my possession, which I will cheerfully place at the disposal of all interested. The photograph taken with large ray, aperture 0.31, shows sharp outlines, the resolution into hexagons, however, appearing only over a moderate part of the frustule (curved field); the second image, taken with small ray, aperture 0.10, exhibits, on the contrary, outlines more obliterated, the hexagonal arrangement extending over nearly the entire frustule (flat field), but dim and melting. The like appearance is to be seen in the images in Plates VI, VII and VIII, taken with the apochromatic 16.0 Mm., 0.30 aperture, of which VI is taken with the normal illuminating operture, that is to say taking about $\frac{1}{3}$ of the system in requisition, VII with larger and VIII with very large pencil (filling $\frac{5}{6}$ of the aperture).

2. *The distinctness of sun images projected in the object plane.*

On account of the small extent of the luminous plane, which the sun furnishes—$\frac{1}{2}°$ measured through the angle, is an equal illumination of an object (as far as a single cone from a wide angle may extend) generally only possible in the place where an image of the sun at least approaching clearness, is projected upon the object itself. To effect this, requires, however, an illuminating system, which is free from sperical and chromatic aberration. The ordinary illuminating apparatus renders possible, it is true, a uniform illumination in spite of the abberrations when a sufficiently broad light source is made use of (for example the sky), since rays from different points of such a light source may work together; with sunlight, however, and equally with the electric light, of which the brightest portion occupies but a small extent, the purpose fails because of the great dispersion of the rays issuing from so small a luminous surface, on account of the spherical aberration of the condenserlens. On the principle mentioned, a condenser system should be used spherically and chromatically corrected (what in ordinary usage is termed "achromatic").

Here comes in, however, a second weighty consideration. Even in ordinary ocular observation it appears to be of great service in securing clearness and distinctness, to illuminate only that part of the preparation which is to produce the image, (and indeed the smallest possible field) the remainder being completely dark, also in general that no more light be sent upon the object and into the microscope than is absolutely required for the purpose of observation. But in the photography advantage of such economy of light is evident in a much higher degree. It is now obvious, that this requirement can only be filled by projection of a small, sharp image of the sun, only covering the image producing part of the preparation, and as exactly as possible in the plane of the object ; while an indistinct image, or one beyond the limiting plane, must be larger than this field, and thus, as a whole, convey more light than is brought to the image. At all events, experience in photography shows that the impressions are better, the more exactly the sun image is placed upon the object, and the more closely it appears limited in this plane.

Even in the taking of impressions with slight enlargement, in which, in order to illuminate a relatively large object field, the sun or carbon point is not used directly as a light source for the condenser, but a ground glass serves to diffuse the light and project it upon the preparation by means of the condenser, the observation of the foregoing rule is decidedly advantageous, that is, to so measure the diameter of the ground glass in proportion to its distance from the microscope, that a distinct image of the same directly in the limiting plane covers only the image producing object field.

3. *The size of the sun image projected in the object plane.*

As is known from Privy Counselor Koch's proposition, an ordinary microscope objective was formerly used for the projection of the sun image in the object plane ; for taking photographs with a system $\frac{1}{12}$ hom. Imm. was always employed a dry objective of 0.30–0.85 Mm. aperture, and gave excellent results. I have myself hitherto made use of such an objective, and submit two photographs of Pleurosigma with apochromatic 2.0 Mm. 1.30 aperture (Plates I, II), in which the sun image was projected by means of the dry objective apochromatic 16.00 Mm. 0.30 num. operture, in the object plane. The sun image projected by the objective mentioned, nearly fills the field of an apochromatic 2.0 Mm. Nevertheless, if an illuminating beam from a larger aperture (for example 0.85 num.) be desirable, as for instance in taking bacilli it is necessary, there is this disadvantage, that recourse must be had to an objective of shorter focal distance, from which issues the correspondingly smaller sun image, and consequently fills only a smaller portion of the oil immersion system. Were an objective, let us say D. D., desired, it would be necessary to insert a convex lens to bring the sun image to the requisite size. The inconvenience arising from the interposing of the convex tens, as it renders difficult the centering of the sun image, gave the final incentive for the construction of an especial achromatic condenser system. It was at the suggestion of the above named gentlemen that an achromatic condenser of 1.0 num. aperture was constructed, which in a corresponding case, capable of being centred and focussed, can be fixed in the place of the ordinary condenser system, and

1. Fitted with diaphragm, permits the use at pleasure of every aperture from 0.1–1.0 num., for focussing the sun image ;
2. Projects a clear sun image even with a fuller aperture ;
3. Finally, has so great a focal length that it projects a sun image nearly filling the field of the apochromatic 4.0 Mm. 0.94 num. aperture ; requiring, however, for weaker objectives with correspondingly larger field the interposition of a ground glass, which, illumined by sun, electric lamp, gas or petroleum, serves as a light source and is projected as such in the object plane.

Plate III shows an impression of Pleurosigma, which the before mentioned achromatic condenser (reduced to 0.40 N. A.) used for the production of the sun image, has not, however, thrown up with perfect clearness, because a defective spot in the heliostat mirror accidentally affected the reflection. A very successful negative showing the sun image clearly, could not, unfortunately, be multiplied by prints, as it was not fit.

II. SPECIAL TECHNIQUE.

After these general considerations it is not difficult to see in what manner to proceed in the special case of taking photomicrographic impressions of a fixed preparation.

Namely, after the part of a preparation selected for photographing, has been examined by means of the strong objective that should be employed, on the lower stand, with the ordinary illuminating apparatus of Abbe, and by diffused daylight, and the data taken with the finding divisions of the movable object stage have been marked for use in refinding, the strong objective is exchanged for a weaker (16.0 Mm.) and the latter quickly adjusted.

The changing of the objective system, ordinarily effected by means of a revolving adjustment, is more easily accomplished on the photographic stand by the use of the centering objective changing slide of my construction, of which a description was given by Dr. Czapski in the *Journal of Scientific Microscopy*, IV, 3. p 293 (1887). When the objective slide is well centered, the middle points of the field fall directly upon the same points of the preparation, which is important for the following manipulation.

The mirror of the stative and the condenser system of the ordinary illumnating apparatus of Abbe will then be removed, and the latter replaced by the achromatic condenser. This is moved up nearly to the object holder and in the ordinary kind is centered in the minimum aperture of the diaphragm. Then the stative is brought to its place on the microscope-table of the apparatus and there fastened.

1. *Employment of the light source direct* (*without ground glass*).

A. SUNLIGHT.

Supposing we had already before directed exactly in the optical axis the pencil issuing from the heliostat and intercepted by the mirror—which should have at least the diameter of the condenser lens—so that the preparation, on examination with the aprochromatic 16.0 Mm. and an ocular darkened by smoked glass, already shows extremely clear in the middle point of the yet indistinct sun image. The latter is now by focussing with the achromatic condenser (which, as is shown by the description given in the first part, has a fine adjustment beside the cog and spring movement applied to the ordinary illuminating apparatus), produced in the object plane as sharply as possible, so that in the final focussing of the condenser, the object chosen for photographing lies clear and with strong outlines in the middle of the very clear, sharply limited, round sun image.

In order to hold perfectly steady the axis of the accurately directed pencil, to accomplish this in the event of irregularities occurring in the working of the heliostat which must unfortunately be taken into account in the conditions here necesary—always to restore the accurate direction, Privy Counselor Koch makes use of the following method, as simple as ingenious :

The diaphragm holder standing nearest the microscope is supplied with the ground glass slide belonging to it, which is now brightly illumined by the sun, and its image can easily be produced in the object plane by reason of corresponding to a shifting adjustment of the achromatic condensor, when the grain of the ground glass is clearly visible through the microscope. Just as easily, upon this, the field of the 16.0 Mm. objective can be defined with a pencil, while the image of the groundglass is observed through the microscope. This done, a diaphragm is placed in the second diaphragm holder near the mirror, nearly corresponding to the size of the penciled circle upon the ground glass, and the placing of this diaphragm is so regulated that it permits only the direct illumination of this circle. If the diaphragm holder is always left in its once proven position, or the position be marked upon the diaphragm stand for this purpose, so that it can always be found again, by the aid of this diaphragm the desired central direction can be given to the sunbeam.

Now follows the final adjusting of the system, when the close-fitting strong system for photographing comes to the tube. In this the object is immediately sharply thrown up by means of a compensation ocular darkened by smoked glass. During the sharp production of the object, now takes place always the running correction of the optical part of the microscope, which consists:

1. In testing, by opening and closing the diaphragm, the aperture best adapted to the particular kind of object.

2. Correction of the objective in regard to the thickness of the cover glass, if it is a dry or water immersion system.

3. Adjustment of the tube length which gives the system the best working.

The first point comes into consideration for preparations of every kind, and is especially important in the case of histologic sections, where a change in the aperture of the illuminating beam often alters in a marked degree the character of the object. Points 2 and 3 are only well attained, as elsewhere sufficiently explained, in the case of test objects and especially the diatoms in question used as such, in photographing which very careful testing of the cover glass correction is easily accomplished, but incommunicable, faults in correction here being on the one hand more easily detected by the most intense illumination than by diffused daylight, but on the other hand are thus the more difficult to get rid of in the image obtained. Objects of other sorts are less sensitive to small variations of the correction, nevertheless it is always necessary in the case of these, to be assured that no great variation in the placing of the correction ring relative to the tube length has been left unrectified.

All being properly regulated, the object then appears in relief upon the clear, yet always pretty sharply limited sun disk, filling the greater part of the field, with outlines and details equally clear and dark ; it gives in the photograph a well contrasted picture ; while if the above advice be imperfectly followed, outlines and details appear over covered with light, and in the photograph give the too soft, melting and poorly contrasted picture, sufficiently familiar, indeed, to all eager novices.

(*To be continued.*)

A MATTER OF INDIVIDUAL DEVELOPMENT.

We do not believe that the State should take care of its educated men ; but that they should take care of themselves and do what they may in behalf of others who have been less favored. Nor is education altogether a safeguard against corruption. Some phenomenal scoundrels in our politics were what are called well-educated men.

All that need be urged is that narrow and ignorant men shall not be put into public positions that require intelligence, thoughtfulness, and breadth of mind. If a man have their qualifications, who cares, other things being equal, whether he went through college, or stopped at the academy, or got no further than the public school, or never had a chance even to secure the training that gives. It is a mere delusion that education is a thing acquired by the yard—that the graduate of the public school has so much, the graduate of the academy so much more, and the graduate of the college so much more. It is a matter of individual development. Outside help only prepares a man for education—sets him forward on the road that he himself must travel. And in our notion it often happens that the supreme men, such as Shakespeare, Washington, and Lincoln, are are the men who owe comparatively little to the schools.—*Exchange.*

COMBINATION DENTURE.

To make a Watts' or Weston's-metal and rubber or celluloid combination denture :

1st. Obtain a good plaster impression, trimming the same as for a simple rubber denture.

2d. Fill the impression with plaster and water-lime, one of the former to two of the latter.

3d. Build on this with sheeted wax a base of the thickness it is desired the metallic base shall be, placing upright and directly over the ridge, and yet out of the way of the to-be-added teeth, five elevations of sheeted wax set on edge. These should be about three-sixteenths of an inch square and set lengthwise with the ridge equal distance apart, and to correspond in position with the second molar (in a full upper or lower denture), one at the symphysis, one between the two, etc.

4th. Flask in Watts' or Weston's apparatus, using the same proportions of plaster and water-lime. Vents should be provided by making continuous with each heel of the plate, a cone shaped piece of wax, or by cutting the plaster-water-lime into suitable form to admit the metal and permit free escape of air.

5th. Dry thoroughly and pour the metal as you would if making a die.

6th. Open, file off excess of metal, notch or perforate the lugs on the ridge, and the metallic base is ready to try in the mouth. When perfectly comfortable in the mouth and adjusted to place, affix the teeth by means of wax, contour; etc., and flask as for rubber.

The advantages are many: A base plate that will not lose its form while the teeth are being adjusted, and the proper contour obtained; weight (in the case of a lower denture); metallic contact with the gums, and knowledge of the fact that a fit has been obtained before the expenditure of time or labor on the later operation.

CONDUCTORS' DEPARTMENT.

OUR CONTENTS.

In Dr. Roseboom's translation from the French of a review of Fermi's work on the ferments, the reader has the first serious attempt at an explanation of the significance of liquefaction of nutrient media.

Dr. Curtis submitted a model report as correspondent of the State society, suggesting the possibilities of the office.

Mr. Rafter touches upon a subject that is coming into prominence in dental teaching, and one that was discussed in detail by another expert before the Odontological Society.

Dr. Howard's 7th society address will be read by district society men throughout the state with interest; its suggestions are numerous and of value.

Supernumerary deciduous teeth are as yet sufficiently rare to cause remark.

The State society report appears in the third person (fourth and fifth perhaps in places) thus relieving some of the speakers of some of the responsibility for their speeches, and sharing such responsibility with them. It is filled with news, much of it dentally important. DeSmith had a hard task, but performed it fairly well.

The translation from the German of Zeiss' monogram on photomicrography appears in this number only in part, the balance to follow in our next. It is technical in the extreme and will interest but few. Its value, however, in some circles will be fully appreciated when the article is complete.

Other, but minor things will be found in their proper place.

CONGRESS THE 10TH.

The Congress meets August 4th, and lasts till August 10th. The Dental Section (XVI) will consider five general themes for discussion : 1, Bromide of ethyl narcosis ; 2, Pyorrhea alveolaris ; 3, Micro-oganisms in caries ; 4, Crown and bridge work ; 5, Irregularities. Of these themes one will be presented by Germany, one by England, one by France and two by America. The themes allotted to America are the two last, and the men selected by the general committee at Berlin to present them are Dr. Barrett, Buffalo, and Dr. Talbot, Chicago. All other papers will be selected from the voluntary ones offered, and as many of them will be read as the time will admit of and the general committee shall deem advisable. There will be clinics and demonstrations each day by the operators selected, and these will be in the Dental Institute of the Royal University. The official languages will be German, English and French. The officers selected from America are four Honorary Presidents, as follows : Dr. Barrett, Buffalo, Dr. Taft, Cincinnati, Dr. Talbot, Chicago, and Dr. McKellops, St. Louis. The American Board has named Dr. Andrews, Cambridge, Mass., as Honorary Secretary for America.

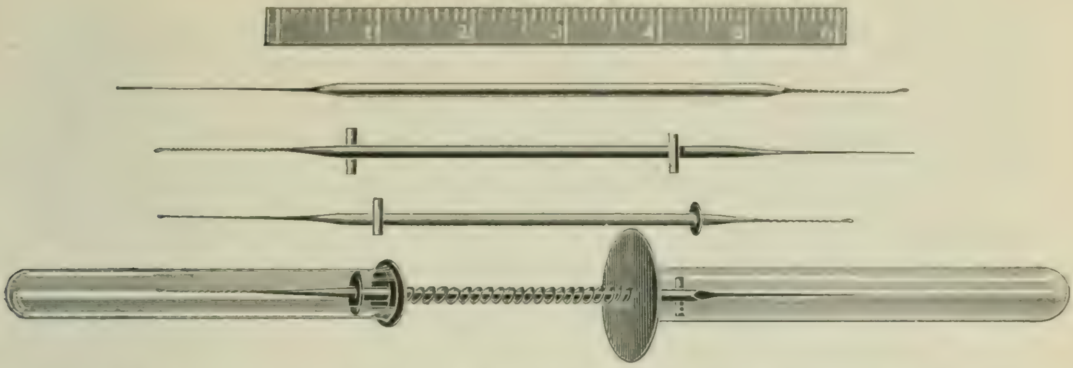
AMERICAN DENTAL ASSOCIATION—"'93."

The thirtieth annual session of the American Dental Association, will be held at Excelsior Springs, Missouri, commencing Tuesday, August 5, 1890, at 10 o'clock, a. m.

Geo. H. Cushing, Recording Secretary.

It is hoped the association will take some decisive action in regard to the great meeting of '93. Dental bodies are slow of movement as a rule, hence the necessity of beginning early in order that the work may be effectively gotten under way.

IMPROVED INNOCULATION NEEDLES.



The uppermost needle is the same in current use—fine platinum wire set in a glass handle.

The second is improved by the application of a guard at or near the end of the handle. This guard is the only part that need come in contact with the tube even in unsteady hands.

The third shows a second form of guard—a disk instead of cross bar.

The fourth has as a further improvement a pair of disks, one at each end of a spiral spring, disks and spring being freely movable on the handle. The object is to close the tubes from and to which the material is conveyed, thus preventing in some degree contamination through air currents set in motion by manipulative processes.

NEW JOURNAL.

The *Dental Mirror*, a monthly, conducted by Dr. Roderigues Ottolengui is announced. News items, personal and relating to societies, will fill a prominent place. A leading feature will be a monthly compilation of opinions of prominent men on given subjects. We await our copy with no little impatience.

A LITTLE PICNIC.

It was in June, and Dr. Greene, of Geneva, made it mighty pleasant for Drs. Curtis of Syracuse, Fowler of Ithaca, Elmendorf and Smith of Penn Yan, Smith of Colorado Springs, White of Phelps, Lee of Auburn, Slocum of Geneva, and Dennison of Waterloo. They want to go again. A previous engagement kept us at home, much to our disgust.

CHICAGO DENTAL SOCIETY.

At the annual meeting of the Chicago Dental Society, held April 1, 1890, the following were elected for the ensuing year: President, C. N. Johnson; First Vice, C. H. Thayer; Second Vice, I. A. Freeman; Secretary, A. E. Baldwin; Corresponding Secretary, T. L. Gilmer; Treasurer, E. D. Swain; Librarian, A. W. Harlan; Geo. H. Cushing to succeed himself on the Executive Committee; C. F. Hartt, E. A. Royce and S. B. Palmer, Board of Censors.

ROCHESTER DENTAL SOCIETY.

At the annual meeting held last month, J. Requa was elected president; B. S. Hert, vice-president; C. F. Howell, secretary and treasurer; C. T. Howard, librarian. The Society will visit Dr. Cowan at Geneseo some day in August.

BENEFICIARIES.

The following will represent the State Society the coming winter:

John W. Wade, Owego, Baltimore College of Dental Surgery, 2nd year.
Ellis MacDougall, Clinton, Baltimore College of Dental Surgery, 1st year.
Chas. F. Baylis, Sangersfield, University of Maryland

UNION BUSINESS COMMITTEE.

Business, Drs. French and Howard; Clinics, Line and Cowan; Exhibits, Green and Howell; Transportation, Arnold.

THE "M. D. S." in 90.

Of the sixteen candidates examined the following passed:

John Biava,	New York.
J. W. Van Sant,	Hoboken, N. J.
Robert Roessler,	Berlin, Germany.
James P. Holder,	New York.
F. T. Van Woert,	Brooklyn.

THE LATE DR. S. D. FRENCH—ACTION BY THE BOARD.

The following was properly engrossed, signed by all the Censors and sent to the family of the late Dr. S. D. French, Troy:

"For the second time since the organization of the Board of Censors, death has invaded our ranks, and it is with great sorrow on coming together, that we miss the presence of our esteemed associate, Dr. Samuel D. French, of Troy, lately removed so suddenly by death.

"For twenty years a member of this Board, he had endeared himself to all by his genial manner, his excellent judgment, and rare skill In the truest sense he was a professional gentleman, and in the loss of so honored a member, so kind and courteous a companion, so sincere a friend and so true a Christian, we have sustained a severe bereavement, and we deeply feel the affliction which has fallen upon this Board, his family and his friends.

"*Resolved*, That this be embodied in our report for this year, and a copy sent to his family, to whom, so far as words can express, we offer our sincere sympathy."

STATE SOCIETY NOTES.

The member without a buttonhole bouquet was not recognized by the chair. The Albany Dental Depot supplied flowers in profusion.

Dr. Barrett quotes Fownes' Chemistry and the U. S. Dispensatory as authority $Hg^2 Cl^2$. To our mind this thing has got to be pushed into Africa for final settlement.

The Society's new president—Dr. W. W. Walker, is the right man in the right place. His large acquaintance among professional men, and exceptional executive ability, ought to make the next annual meeting an event in the Society's history. Let every officer, committee-man, and member turn in his quota of work and the Delevan will need an annex if the legislature happens to be in session.

A clipping from the tail end of a recent annual address:

"A final suggestion: That the by-laws be so amended as to provide for a careful examination before delivery, by a suitable committee of the President's annual address, and if found a last-minute product and unrevised, particularly as to length, that the same be duly cut down, and if necessary freely pricked if only for the escape of superfluous gas."

THOROUGH TECHNICAL TRAINING.

As long as the pur-blind genius of dentistry remains to see ONLY ways to engineer or invent means and methods to repair or make substitutions for the harms that come to the dental organism, I don't know of anything I have recently read which more nearly hits the demand for sound advice and counsel to young dentists than what I inclose to you,—albeit it comes to me in the address given to the graduates of the Royal Academy of Artists, in England, by one of the most conspicuous of art-amateurs—a foreign nobleman. It seems to me his words altogether—this short extract in particular—apply just as well to dentists as any other class of artists: Mc G.

"There is a thorough technical training which must not be overlooked. When a man learns anything thoroughly it teaches him to respect what he learns. It teaches him to delight in his task. The happiness of our lives depends less upon the actual value of the work which we do than on the spirit in which we do it. If a man tries to do the simplest and humblest work as well as he possibly can, he will be interested in it; he will be proud of it. But if, on the other hand, he only thinks of what he can get for it, then the highest work will soon become wearisome."

At the last moment before closing this form we hear of the death, after five weeks illness, of Dr. Clint. Atkinson, eldest son of Dr. Wm. H. Atkinson. His death robs our venerable friend, at a time of life when he can ill afford the loss, of a constant and trusted companion, and in daily office practice of the services of one who was all but equivalent to his father's own right hand.

PELLETS.

This Journal is printed quarterly—the 15th day of the month. Don't forget it.

Katie, a five year old:—"Mamma, when your teeth ain't growing are they inside your skin?

WANTED—The name of the fool who first suggested the cutting of corks close to the bottle.

"Good morning, Doctor," said the profoundly funny patient to his dentist, "Is the chief inquisitor within?

Oh that mine enemy would write a letter! Oh that he would send it to a dental journal! Oh that his name were Catching.

The marine biological laboratory at Wood's Hall, Massachusetts, is in full operation, the investagators having begun their work June 2, and students June 9th.

The Ontario Dental Society begins its annual meetings to-day—the 15th. The programme includes an address, a number of papers, clinics, and a banquet at "Harry Webb's."

The dentist who files the ODONTOGRAPHIC JOURNAL will do us a favor and an exchange justice by placing "Conductors Department" below "Health Commandments" in the January '90 number.

Get ready for the union meeting of the 5th, 6th, 7th and 8th societies in Rochester next October. A three-days meeting is being planned by the business committee.

At the "Battle of Gettysburg," New York, a Straw looked through a fog-horn-like affair that stood near a couple of boxes on the raised platform and remarked,—"Don't see that this thing brings out the picture any better." Whereupon a bystander observed—"That isn't an eye-trumpet, Mister: that's for your ear—belongs to the phonograph there." And straightway this double of Neptune sat him down to think, while a French censor and a recently-built ex-president retired to weep.

The Seventh Society is in a fair way to become "the gateway to domestic felicity." We should have chronicled the fact in our April issue that Drs. B. S. Hert and LeRoy Requa had became Benedicts, but the oversight enables us to raise this particular phase of the census by adding Dr. J. W. Cowan of Geneseo, to the list. The Seventh society, by the way, is a good one to belong to, and some ladies seem to be very wide awake to the fact. Their judgment and good taste are to be commended.

"There was a man," etc., and Tim., X, 16 routed out the occupants of 38, who in turn set him after the occupants of 42, who in their turn directed him to the room at the head of the stairway which, according to this wicked pair, was occupied by two who should have been up with the lark—in the morning. Whack, whack, whack, on the door, and "There was a"—on the outside, when as sweet a voice as this connoisseur had ever heard called from within—"Come." But he didn't. On the contrary, he shot down the stairway like lightening, and with a lighted cigar in his mouth, leaned against the clerk's desk as if he hadn't been above the first floor in a month.

At a recent meeting of the Rochester Dental Soeiety, the essayist of the evening discussed comparative dental anatomy, and in the course of his remarks stated as a fact of personal observation that sheep nipped by dropping the head or, in other words, throwing the muzzle toward the feet. It was admitted by the essayist that this was not according to rule, but a fact nevertheless. Pro and con resulted in the appointment of a committee of one, Dr. Brown of Mt. Morris, to study sheep and report at the next meeting. The committee betook himself the Sunday following to a sheep pasture, studied sheep and forthwith reported "Never," and he knew it.

BOOKS, PHAMPLETS, ETC.

ORTHODONTIA, OR MALPOSITION OF THE HUMAN TEETH; ITS PREVENTION AND REMEDY. By S. H. Guilford, A. M., D. D. S., Ph. D., Philadelphia; Spangler & Davis. Pp. 186.

"Orthodontia," or "That branch of dental practice which relates to the correction of irregularities of position of the human teeth," in the hands of an experienced teacher and thoroughly conscientious practitioner like Dr. Guilford, acquires new interest even to those advanced in this phase of dental practice, and becomes easy of comprehension to those who have but just begun.

The work had been prepared at the request of the National Association of Dental Faculties, and upon their acceptance and endorsement of it last August, became at once one of the series of text-books in course of preparation for the use of students of American dental Colleges. In his treatment of the subject, the author's aim has been "to lead the student step by step from the simplest beginning to the more complicated and difficult work of practical treatment. To this end, the underlying principles of the art are first elucidated, after which the principle methods employed are explained, and lastly the correlation of principles and methods is shown in their practical application to typical cases.

Under the head of principles we have the subject defined, its etiology, evils associated with irregularity, advisability of correction, age at which it may be begun, movements to be produced and principles governing the application of force, extraction as related to the subject, and the physiology of tooth-movement and character of the tissues involved.

Materials and methods include the study of the case, appliances, considerations of Farrar, Patrick and Byrnes' methods, the Magilll band, Angle, Coffin and Talbot's methods, the elaborate discussion of which is followed by detailed considerations of specific forms of irregularities and their treatment.

The make-up of the book is a credit to all concerned.

A Practical Treatise on Artificial Crown — and Bridge-Work. By George Evans. Second edition revised and enlarged. Illustrations 547. Pp. 296. Philadelphia ; S. S. White Manufacturing Company.

A second edition of a dental text-book within a year is complementary to its author always, and a fair measure of the esteem in which his work is held by the busy practitioner. The field covered is comparatively new, and the changes so rapid and radical that revision must be the order of the day for sometime to come. The journals, of course, supplement text-books in the matter of publication of new and improved methods and appliances, but because of the number and scattered character of such sources of information their contents are lost to many and but partially and imperfectly known to others. Such matter, however, coming as it does, to the author of a work like that in question, is sifted for what it is worth, both from a scientific and practical standpoint, and whatever of good it contains is incorporated for the benefit of the reader. Dr. Evens has done this thoroughly and well, and no better ready reference work on this special subject need be looked for.

The Student's Manual and Hand-Book for the Dental Laboratory. By L. P. Haskell. Second edition. Pp. 97. Philadelphia; Wilmington Dental Manufacturing Company.

This little work has been changed in form, enlarged and revised, and in consequence thereby greatly increased in value as a working companion for the dental student. The placing of this thoroughly practical treatise in the hands of his student will save the preceptor a great amount of time usually devoted to explanation and "showing him how." It is fully illustrated.

Trieses' Dental Book is for appointments and entering the results of examinations, and temporary the operations of the day themselves. It has the appearance of a valuable addition to this class of office furniture. Justi is the publisher.

C. Ash & Sons illnstrated catalogue of mineral teeth, eighty-five pages, is devoted to single teeth exclusively. The cuts are unique and a new departure in dental illustration.

THE
Odontographic Journal.

VOLUME XI.—*October, 1890.*—*No. 3.*

CEMENT AND GUTTA-PERCHA FILLINGS.—ADVANTAGES AND DISADVANTAGES OF EACH.

CEMENT.—DISADVANTAGES.

1.—The cement itself often varies, and what kind will work well at one time, will not at another; again, one needs to keep a fresh supply on hand, as it loses it virtue on being opened.

2.—The mixing itself is, to my mind, an objection, as it sticks to everything with which it comes in contact, having to be removed from the instruments by scraping; fingers, ditto.

3.—How long will it last in a tooth? The shortest time in which it has dissolved that has come under my notice has been about four weeks, and this in a large crown filling; this was of course an exception.

4.—They frequently wear rough, in which case they are an annoyance.

5.—Their conductivity; in some cases this results in the death of the pulp.

6.—Their difficulty in removing; generally requiring the use of the engine. This is a *serious* objection, especially when pulpitis exists, or the tooth is in the ulcerative stage; also, in case of thin enamel layer where danger of fracture exists.

7.—Decay about the filling; this, in some cases even involving the pulp; in excavating, the cavity in such cases is much larger, and as fillings are to *preserve* tooth structure, it is not fulfilling its mission.

ADVANTAGES.

1.—Diminishing sensitiveness; a tooth can be partially excavated and filled with it; after a few weeks, remove the fillings and complete excavating; the difficulty, however, in its removal prevents this being frequently done.

2.—When the shape of the cavity is such that it will hold nothing else.

3.—Strengthening an unprotected enamel wall; many teeth have thus been made serviceable.

4.—Matching color of tooth; this often can be perfectly done by combining different makes, or even using coloring materials; recall a case where, out of some six shades, could not obtain the right color, but by rubbing up some India ink with the liquid and then mixing the powder with it, managed to obtain a very fair shade; gamboge and sepia could be used in the same manner.

5.—For capping under filling; if too near the pulp, oil of cloves can be mixed with it, then over this place the regular mixture.

GUTTA-PERCHA.—DISADVANTAGES.

1.—When a tooth is too sensitive to shape cavity.

2.—In teeth with a thin wall.

3.—In teeth having crown cavities, or cavities connecting with crown, that there are of a dense structure; as *these* will bear a metallic plug; but even here they will last for years.

ADVANTAGES.

1.—Easy manipulation.

2.—Does not deteriorate by keeping or exposure to the air.

3.—In wearing, it does so from the center, leaving the walls of tooth protected.

4.—Can be used without rubber dam, and even when moisture is present; this is a great advantage, especially with children.

5.—In very sensitive teeth it can be put in, in solution.

6.—Do not have to wait for it to set, but can be finished at once.

7.—Removal generally in large pieces, and often in one; this is a decided advantage if an exposure of the pulp exists; in the cements, small pieces are likely to remaim, and these are almost impossible to remove without giving pain to the pulp.

8.—When worn out, it is very easily replaced, and with scarcely any pain.

9.—Its non-conductivity; in this it probably ranks first.

10.—For preventing electrical action, it is an excellent insulator.

11.—For tempoary teeth, when they are too painful to excavate thoroughly, the cavities can be wiped out with strong carbolic acid and filled with gutta-percha; and the chances are this will last as long as the teeth need to remain, especially if the pink gutta-percha is used.

12.—Most important of all is the freedom from decay; in this respect it is certainly the most perfect stopping that we have: teeth can readily be kept along with this for many years, and without any enlargement of the cavity. From five to ten minutes will replace most any gutta-percha filling.

13.—For capping in a sensitive tooth it is easier and quicker to manipulate than cement, as there is no mixing to be done nor waiting for it to set.

14.—For repairing metallic fillings, when there is only slight caries, it is invaluable; as often, if thus treated, a filling will last for many years; whereas if patched with same material as the filling, the chances are not so favorable.

15.—As a temporary stopping over an application of arsenic or some medicament; in such cases it is sometime better not to dry the cavity, as it can then more readily be removed.

16.—To protect a tooth for a few days until the operation can be completed.

17.—Where caries exists in incisors of children from seven to twelve years of age, they can more readily be kept in good condition by its use.

18.—In front teeth, where patient does not want or cannot afford gold, or if the tooth is at all soft.—Hitchcock, *Archives of Dentistry.*

A DIRECT BLOW AT SCIENTIFIC DENTAL EDUCATION.

We believe it should be seriously considered, whether or not the law existing in some States, providing for the examination of the holders of dental diplomas before they are licensed to practice, do not directly menace the growth of higher dental education.

If the work of the dental college is to be thus nullified, we believe it will discourage the best talent from engaging in the work of teaching until the profession will on this account take a necessarily lower level. And not only this, but it will also discourage young, capable men from entering college at all, if it should come about that a diploma does not confer a right to practice. The men in the front rank should look at these questions squarely and logically, and see if this law is not really a backward step in dentistry.

The question as it stands to-day is this: Which is the more capable judge of a man's qualifications for dental practice? A faculty of a reputable dental college, or a board of examiners? When we look at the history of our colleges, especially within the past few years, and note the earnest endeavor all over the country to increase the thoroughness of college instruction, and then glance at the examining boards and the manner of their appointment, can an unbiased mind doubt that the college faculties are the best judges? We think not.

We believe the law referred to is not progressive. We believe that the highest dental education depends more upon dental colleges than upon any other factor, and this law (fortunately active in only a few States,) strikes at their proper function, and will work evil to our loved profession. We raise a note of warning.

If other States should pass a law similar to that referred to, then we fear that dental colleges and the best dental progress will go to the wall.

But we do not believe this will be done. The incongruousness of this law, the unprecedented usurpation of power, the injustice, must be evident to anyone who examines the question, and will prevent other States from adding similar enactments.—*Western Dental Journal.*

THE NEW THEORY OF THE ACTION OF CHLOROFORM.

It has been pointed out in the editoral pages of this Journal, and elsewhere, that an operation with "a small dose of chloroform is a dangerous thing." That statement was based upon certain experiments by Dr. Lauder Brunton, the results of which appeared to be borne out by the clinical experience of many observers, and also by the evidence so frequently obtained at inquests, viz.:—that (by way of showing that death was not due to an incautious overdose) the patient was not wholly anæsthetised, or was recovering from the more profound effects of chloroform, when, during the removal of the "last" tooth, or the insertion of the final stitch, death ensued. In such cases it was argued that chloroform was a direct sedative to the action of the heart; that it reduced the excitability of the cardiac (motor) centres of the sympathetic; that, common sensation not being overcome, the "trivial" operation was perceived by the sensory centre in the medulla; that a resulting impulse was transmitted to the adjacent centre of the pneumogastric and, through that nerve, to the heart inhibiting its already impaired action, failure of the heart ensuing. Thus death from shock and syncope was held to take place; and it was further maintained that, had the patient been fully anaesthetised throughout the operation, shock would have been avoided and syncope, at least from that cause, averted. To-day that teaching of the physiological action of chloroform has to be, not simply amended but almost entirely reversed. The experiments of the Second Hyderabad Commission give grounds for a different interpretation of the phenomena attending the administration of chloroform from what has hitherto generally been accepted. The results obtained by the First Commision were so much at variance with those acquired by other experimenters that a Second Commission was organised, having among its members that distinguished physician and scientist already referred to—Dr. T. Lauder Brunton, F. R. S. The Second Hyderabad Commission confirmed the conclusions arrived at by the preceding one and, furthermore, made several important discoveries, some 500 animals having been killed in the experiments. The report of the commission has not yet been published in a complete form, although important selections from it have at different times appeared in the *Lancet*, to which Journal I am indebted for the information which I possess and for the extracts which follow.

These extracts do not by any means cover the whole ground traversed by the experiments. They are however, sufficient to show that certain hypotheses as to the action and the safety or danger of chloroforn are not in accord with the conclusions obtained from the recent and the most elaborate series of experiments ever carried out in that connection. The extracts are arranged in such order as to bear upon the successive stages in which death was supposed to occur in the case depicted above.

"The three series of experiments show that simple chloroform poisoning causes paralysis of the respiratory centre, and then gradual death, the heart being the last organ in the body to die. And, however concentrated the chloroform may be, it never causes sudden death from stoppage of the heart."

"Chloroform, when given continously by any means which ensures its dilution with air, causes a gradual fall in the mean blood-pressure, provided the animal's respiration is not impeded in any way, and it continues to breath quietly without struggling or involuntarily holding of the breath. But it must be clearly understood that such fall of blood-pressure is in no sense a danger, in any case which is fit for an operation, unless it is excessive—that is to say, unless an overdose of chloroform is inhaled.

"That struggling during chloroform inhalation, or anything which interfered with the breathing in any way, such as holding the breath or asphyxia, produced irregularities in the circulation and in the action of the heart."

"Chloroform has no power of increasing the tendency to either shock or syncope during operations. Every operation that ingenuity could suggest, or that has ever been supposed to be dangerous under chloroform was performed by the Commission in every stage of Chloroformisation, without any effect upon the heart, the pulse, or the blood-pressure."

"That inhibition of the heart's action and slowing of the circulation with rapid fall of pressure, caused by irritation of the vagus, proved to be a safeguard—rather than a danger,—preventing the anæsthetic from being carried too rapidly from the lungs to the nerve centres. That an effect precisely similar to that caused by electrical stimulation of the vagus is produced through the same nerve: (*a*) in the holding of the breath, which occurs in the early stages of chloroform administration; (*b*) in asphyxia; and, (*c*), sometimes after the respiratory centre is paralysed in the later stages of chloroform poisoning."

As soon as this safeguard action of the vagus was demonstrated, it became clear "that chloroform and shock were not associates but incompatibles; and that the supposed capricious action of chloroform upon the heart was due either to the stimulating effect of concentrated vapour upon the nervous system (the vagus), or to the effect of asphyxial blood upon the nerve centres, resulting in the exclusion of the poison from the system, and not the direct effect of the absorbed poison upon the heart or its nerves."

"Though fall of pressure is inseparable from chloroform administration, there is never the least danger if it falls regularly, and if the inhalation is stopped directly the state of the cornea shows that the patient is 'under.' Regularity of the blood-pressure depends entirely upon regularity of the respiration. Any irregularity, therefore, in the fall of blood pressure during chloroform inhalation, indicates irregularity of, or interference with, the respiration; and, *per contra*, any irregularity of, or interference with the respiration, at once causes irregularity in the fall of blood pressure; but as long as the respiration is regular and not interfered with, the fall of the blood-pressure will exactly correspond with it, and will cease long before a dangerous point is reached, *if the inhalation is stopped when* *the cornea becomes insensitive*, or other signs shows that the patient is 'under.' If the respiration is kept up without struggling, holding the breath, or asphyxia, chloroform may be given slowly or quickly freely with perfect confidence, without the slightest risk to the patient.

The Commission has demonstrated that the aim of the surgeon must be to give chloroform so that the blood-pressure should fall regularly throughout the whole administration, and that the blood-pressure can only be kept free from irregularity by absolute regularity of the breathing. The chloroform must, therefore, be inhaled in such a way that the breathing is natural and regular throughout. Feeling the pulse during chloroform inhalation is no guide whatever either to the blood-pressure or to the one thing necessary for safety, which is to keep it regular ; and it has been shown above that the pulse is of no value as a sign of approaching danger, since it is only affected dangerously (*a*) when the respiration has been interfered with, or (*b*) by an over dose. Lastly in order to keep the breathing regular, the whole of the administrators attention must be concentrated upon this point alone ; and it is therefore clear that if, as is now recommended in most of the text books, part of the chloroformist's attention is to be given to the pulse, an important element of danger comes into the administration.

At present, being in the wilds of the Rocky Mountains and amidst scenes of the "far west," I have not any means of referring to the pages of the *Record*, or to other literature bearing upon the subject. But at the earliest moment I hasten to place before the readers of the Journal, with which I was so long and happily associated, this doctrine of the action of chloroform, which, if not entirely new, is different from that which was generally accepted, even by the highest authorities, and also enunciated in the pages of the *Dental Record*. If I remember rightly it was the received opinion in Scotland, as well as that of Sir J. Y. Simpson, Mr. Syme, Sir J. Lister, &c., that death results from failure of respiration and not from syncope, and it was, therefore, of the utmost importance to watch with the greatest care the respiration alone, discarding the pulse, the pupil, &c. This, too, is the lesson urged by the Second Hyderabad Commission.

The question of anæsthesia by chloroform in dental operations has been discussed by the Odontological Society, and some years ago the consensus of opinion was that, owing to the high percentage of fatalities, chloroform should only be administered in exceptionally severe cases (in which nitrous oxide or ether was not suitable), and then, by preference, at the patients residence. Should the results and recommendations of the Second Hyderabad Commission be proved correct and satisfactory in experience, the data so gathered will necessitate the reconsideration of the question by the dental profession.—GADDES, *Dental Record.*

NATIONAL ASSOCIATION OF DENTAL EXAMINERS.

This important organization met at Excelsior Springs, Mo., August 4th.

A large portion of the proceedings of this body are, necessarily, of a character unsuited for publication, as they involve, frequently, the interests of individuals and institutions.

This organization derives its power to act from the State Examiners, and has not intrinsically any legal status. Its power is, however, none the less on this account, as its orders go down to the State Boards, and through them they acquire legal force. This necessitates the greatest possible care in the consideration and administration of its work.

It is to be regretted that this was not manifested at the recent session. The attempt to arraign certain colleges for a supposed dereliction of duty was certainly outside of the general work of this organization. This would properly seem to be the province of the legally organized body, to whom all complaints should be relegated for examination.

The National Association, however, thought otherwise, and assumed to try these colleges in secret session, and without notice to the supposed offenders. The charge originated from a single absent member of the Association, and was simply a general statement without a particle of evidence to substantiate it. Had this been presented, the charge was of such a puerile nature that no body of dignified character would for a moment have entertained it, certainly not without giving due notice to the parties implicated.

The present condition of affairs between the colleges and State Examiners is not altogether satisfactory, and it is imperative on both sides to move with caution. There is no necessity for antagonism; but if there is to be a repetition of this kind of crude legislation, it will certainly fan the smothered embers into a flame of righteous indignation that can only end in injury to dental education in this country.—*International Dental Journal.*

TO REDUCE NERVE BROACHES.—I have a little device which is used to reduce to any infinitesimal size nerve broaches, which we all find so necessary. It is nothing more than taking a soft steel and rubber packing and placing between them emery disks, and by placing the small broach in between this and revolving it, it cuts it down to any size desired. If you will try it, you will find it one of the most useful things you ever had in your office, and the means of removing the pulp from the finest canals. It has given me more satisfaction than anything else I have in my office.—BONWILL, *International Journal.*

THE NECESSARY PEROXIDE OF HYDROGEN.

Stop suppuration! That is the duty that is imposed upon us when we fail to prevent suppuration.

As the ferret hunts the rat, so does peroxide of hydrogen follow pus to its narrowest hiding place, and the pyogenic and other micro-organisms are as dead as the rat that the ferret catches, when the peroxide is through with them. Peroxide of hydrogen ($H_2 O_2$) in the strong 15-volume solution is almost as harmless as water, and yet, according to the testimony of Gifford, it kills anthrax spores in a few minutes.

For preventing suppuration we have bichloride of mercury, hydronapthol, carbolic acid, and many other antiseptics, but for stopping it abruptly and for sterilizing a suppurating wound we have only one antiseptic that is generally efficient so far as I know, and that is the strong peroxide of hydrogen. Therefore I have qualified it, not as "good," not as "useful," but as "necessary."

In abscess of the brain, where we could not thoroughly wash the pus out of tortuous canals without injuring the tissues, the H_2O_2 injected at a superficial point, will follow the pus, and throw it out, too, in a foaming mixture. It is best to inject a small quantity, wait until foaming ceases, and repeat injections until the last one fails to bubble. Then we know that the pus cavity is chemically clean, as far as live microbes are concerned.

In appendicitis, we can open the abscess, inject peroxide of hydrogen, and so thoroughly sterilize the pus cavity that we need not fear infection of the general peritoneal cavity if we wish to separate intestinal adhesions and remove the appendix vermiformis. Many a patient who is now dead could have been saved if peroxide of hydrogen had been thus used when he had appendicitis.

The single means at our disposal allows us to open the most extensive psoas abscess without dread of septic infection following.

In some cases of purulent conjunctivitis we can build a little wall of wax about the eye, destroy all pus with peroxide of hydrogen and cut the suppuration short. Give the patient ether if the H_2O_2 causes too much smarting. It is only in the eye, in the nose and in the urethra that peroxide of hydrogen will need to be preceded by cocaine (or ether) for the purpose of quieting the smarting, for it is elsewhere almost as bland as water.

It is possible to open a large abscess of the breast, wash it out with H_2O_2 and have recovery ensue under one antiseptic dressing, without the formation of another drop of pus.

Where cellular tissues are breaking down and in old sinuses, we are obliged to make repeated applications of the H_2O_2 for many days, and in such cases I usually follow it with balsam of Peru, for balsam of Peru, either in fluid form or used with sterilized oakum, is a most prompt encourager of granulation.

If we apply H_2O_2 on a probang to diphtheritic membranes at intervals of a few moments, they swell up like whipped cream and come away easily, leaving a clean surface. The fluid can be snuffed up into the nose and will render a fetid ozæna odorless.

It is unnecessary for me to speak of further indications for its use, because wherever there is pus we should use peroxide of hydrogen. We are all familiar with the old law, "*Ubi pus, ibi evacua*," and I would change it to read, "*Ubi pus, ibi evacua, ibi, hydrogenum peroxidum infunde.*" That is the rule. The exceptions which prove the rule are easily appreciated when we have them to deal with.

Peroxide of hydrogen is an unstable compound and becomes weaker as oxygen is given off, but Marchand's 15-volume solution will retain active germicidal powers for many months if kept tightly corked in a cold place. The price of this manufacturer's preparation is about 75 cents per lb., and it can be obtained from any large drug house in this country. When using the H_2O_2 it should not be allowed to come into contact with metals if we wish to preserve its strength, as oxygen is then given off too rapidly.

H_2O_2 must be used with caution about the hair, if the color of the hair is a matter of importance to the patient, for this drug, under an alias, is the golden hair bleach of the *nymph's dispare*, and a dark haired man with a canary colored mustache is a stirring object.—MORRIS, *Dental Register.*

CEMENT FILLINGS.—Lately I have been making some experiments in incorporating a very fine grained asbestos in oxyphosphate fillings, in the proportion of about one-third of asbestos to two-thirds phosphate. Oxychloride I have abandoned as being too much of an escharotic to place near tooth-pulps. Even the oxyphosphate, which does not irritate, permits thermal changes and shocks, lasting, perhaps, a week or a month in some cases. I am incorporating asbestos, which we will assume to be a better non-conductor than the oxyphosphate itself. I have done that in some desperate cases in which I expected serious trouble from the solid gold operations near the pulp, and yet in not a single instance have the patients complained of any thermal changes. I have had success with it as a nerve-capper. A non-conducting filling is what we want. It occurrèd to me that perhaps a diametrically opposite method from that which was pursued thirty years ago might be successful. We then used fine ground quartz, or silex in oxychloride fillings, thinking it would prevent wear; but we found when a piece of silex would get loose it would plow its way across the filling and assist in breaking it down instead of preventing it from wearing away. Asbestos is exactly the opposite of silex; instead of fragments of glass, it is silken thread; it will allow the masticating motion of the teeth without abrasion, and prevent wearing.—Brown, *Ohio Journal.*

NATIONAL ASSOCIATION OF DENTAL EXAMINERS.

The ninth annual meeting of the National Association of Dental Examiners was held at Excelsior Springs, Mo., commencing Monday, August 4, 1890.

The following State boards were represented:

Colorado, Dr. P. T. Smith.

Illinois, Dr. C. R. E. Koch.

Iowa, Drs. S. A. Garber, E. E. Hughes, and E. D. Brower.

Pennsylvania, Dr. Louis Jack.

Maryland, Dr. T. S. Waters.

Kansas, Drs. L. C. Wasson, and A. M. Callaham.

Ohio, Drs. J. Taft and H. A. Smith.

Minnesota, Dr. J. H. Martindale.

During the sessions the Board of Registration in Dentistry for the State of Rhode Island and Providence Plantations, represented by Dr. Wm. P. Church, was elected to membership.

In the absence of the secretary, Dr. F. A. Levy, Dr. J. H. Martindale, of Minnesota, was elected secretary *pro tem.*

After discussion, the following resolution, offered by Dr. Jack and amended by Dr. Koch, was adopted, on motion of Dr. Taft:

Resolved, That this body recommends the various examining boards under no circumstances to grant temporary licenses to dental students at any period of their course of instruction, whenever their State laws will permit them so to do.

Drs. Jack, Garber and P. T. Smith were appointed a committee to formulate the principles which this association would recommend should be incorporated in the State laws. This committee subsequently presented a report which, as amended and adopted, recommended the following principles for incorporation in laws for the regulation of dental practice or for the guidance of those framing them:

1. The creation of boards of examiners in each State.

2. The boards to be officially created by the constituted appointing power of the various States, the appointees to be selected from a number of names presented by the representative State societies; each State Society at its annual meeting placing in nomination not more than two names for each appointment to be made.

3. Recognizing five years' actual practice at the time of the passage of the law as qualifying for continuance of practice.

4. Empowering the examining board to examine and grant certificates to non-graduates, provided the candidates present satisfactory evidence of having had at least five calendar years of instruction.

5. These and all other examinations to be both oral and written, and candidates to be also subjected to tests of practical skill.

6. Empowering the board to examine graduates in dentistry.

7. Prohibiting medical graduates without special qualifications practicing dentistry.

8. Requiring medical graduates to have their special qualifications determined by the same tests as other non-graduates in dentistry (see 5).

9. Making failure to pass the required examination in any one branch sufficient cause for refusal to grant the certificate.

10. Making failure in the practical tests in either of the two general departments of dentistry work qualification.

11. Expressing the opinion that examinations for the special degree in dentistry should be conducted by the board of examiners established by law in each State, instead of by faculties as at present; and the belief that the power to grant degrees must at length become vested in boards created for the purpose.

12. Conferring on State boards the power to revoke, for cause, a certificate of qualification previously granted.

The secretary was directed to call the attention of the American Dental Association to the fact that a case involving the constitutionality of the law regulating the practice of dentistry in New Hampshire is now pending in the Supreme Court of the United States, and asking them to see to it that it does not go by default.

Dr. Koch, from the committee on dental colleges, reported the following schools the diplomas of which this association recommends that the State boards indorse :

American College of Dental Surgery, Chicago, Ill.

Baltimore College of Dental Surgery, Baltimore, Md.

Boston Dental College, Boston, Mass.

Chicago College of Dental Surgery, Chicago, Ill.

College of Dentistry, Department of Medicine, University of Minnesota, Minneapolis, Minn.

Dental Department, Columbian University, Washington, D. C.

Dental Department of Northwestern University, Chicago, Ill. (Now University Dental College.)

Dental Department of Southern Medical College, Atlanta, Ga.

Dental Department, University of Tennessee, Nashville. Tenn.

Harvard University, Dental Department, Cambridge, Mass.

Indiana Dental College, Indianapolis, Ind.

Kansas City Dental College, Kansas City, Mo.

Louisville College of Dentistry, Louisville, Ky.

Minnesota Hospital College, Dental Department, Minneapolis, Minn. (Defunct.)

Missouri Dental College, St. Louis, Mo.

New York College of Dentistry, New York, N. Y.

Ohio College of Dental Surgery, Cincinnatti, O.

Pennsylvania College of Dental Surgery, Philadelphia, Pa.

Philadelphia Dental College, Philadelphia, Pa.

School of Dentistry of Meharrry Medical Department of Central Tennessee College, Nashville, Tenn.

St. Paul Medical College, Dental Department, St. Paul, Minn. (Defunct.)

University of California, Dental Department, San Francisco. Cal.

Northwestern College of Dental Surgery, Chicago, Ill. (The diplomas of this college are discredited after 1889.)

State University of Iowa, Dental Department, Iowa City, Ia.

University of Maryland, Dental Department, Baltimore, Md.

University of Michigan, Dental Department, Ann Arbor, Mich.

University of Pennsylvania, Dental Department, Philadelphia, Pa.

Vanderbilt University, Dental Department, Nashville, Tenn.

The following officers wers elected for the ensuing year: C. R. E. Koch, Chicago, Ill., president; L. C. Wasson, Topeka, Kan., vice-president; J. H. Martindale, Minneapolis, Minn., secretary and treasurer. The president appoinued as the committee on dental colleges, Drs. Louis Jack, T. S. Waters, E. E. Hughes, W. P. Church, and J. H. Martindale.

On motion, the following committee was appointed to consider the advisibility of holding the meetings at some other time and place than the annual meetings of the American Dental Association, with discretionary power in the matter: Drs. J. Taft, F. A. Levy, and S. A. Garber.

Adjourned to meet at the call of the president.—*Dental Cosmos.*

"THE EDITORIAL FUNCTION" AGAIN.

Must an editor be a clergyman before he may feel free to comment on the proceedings of a ministerial association, a general before he may criticise a military movement, an actor or be debarred from expressing an estimate of a play or of its presentation, an artist by profession or be supposed not to have an opinion of sculpture or painting? Must an editor have been a New York alderman before he may call attention to the corruptions of municipal government? The editor of a daily newspaper writes upon any topic which he deems likely to be of interest to his readers. He may say things that are wise or otherwise; but if he is arraigned it should be for the character of his writing, not because he transcends his function in presenting his views on any public question.

Sacred history tells us of a nobleman who listened—and to his immense advantage—to the suggestion of a little serving maid. The familiar proverb, "A cat may look at a king," expresses the idea that it is not the prerogative of a class to be above and beyond the criticism of those not of equal rank, but who may nevertheless have convictions and a disposition to express them. The sum of the matter is that it is not who says it, but what is said, that entitles any contribution, editorial or otherwise, to consideration.

It is related that a member of Mr. Beecher's congregation once took him to task for utterances in the pulpit of which he, the member, highly disapproved. Mr. Beecher is credited with the reply, "Oh, if you only knew the things I want to say sometimes and don't, you would not find fault with what I do say." The probability is that another good brother was mentally if not openly censuring him for the failure to express the thoughts which he did not give utterance to. Thus editor and preacher are alike unable to please all, and are alike open to the conflicting criticism of "weaker-than-water counsel," and "dictation bordering on usurpation." Happy the editor who knows just what to say and what to avoid saying; who says that, and only that, which the subject or the occasion requires, and whose views and their expression commend themselves to his readers.—*Dental Cosmos.*

TOOTH DECAY TO DATE—AN OUTLINE.

Tooth decay, an affection common the world over, but by no means confined to man, dates back to the earliest traditions of the race, and even beyond that if scientific men read aright the relics of a day that outdates tradition itself. The "find" at Abbeville of a fossil jaw, with a single carious tooth, seems to substantiate the statement as made (Magitot, page 5). Under domestication all become more liable to attacks of this nature, man and other animals, and the nearness to infancy, the extent of the trouble, and its completeness as to destructive effects, are directly as such domestication, which may be translated as civilization. But whether in the domesticated animal or in the same animal in the wild state, tooth-decay is constant in its relations to cause, progress and results, the last of course subject to modification by interruptions natural or artificial. Beginning at the surface the destructive process is continuous until the hard tissues—enamel, dentine and cement—disappear, and nothing remains of what was one time useful and ornamental in animal economy.

The theories called upon to account for this state of affairs were chiefly three, to which important additions have been made by recent, we may say, very recent, investigators.

1st. The vital theory, or organic, was held to be a spontaneous affection, inflammatory, and at times produced by gangrene or mortification of tooth tissues. This answered very well at first sight, but its opponents would not have it inflammatory because of the non-vascularity of the tissues concerned, while as for gangrene or mortification there was no good reason why it should always be from without. This theory came up apparently only to be put down.

2d. The chemical theory was more in keeping with matters of daily observation, and early investigators, or men with a turn that way, soon demonstrated the presence of chemical action in the oral cavity, and duplicated to some extent the same, or rather a similar, thing in the laboratory. Teeth melted away in the mouth, chemical action was proven, the acid elements sought for and found, and sound teeth made to show by artificial agents and conditions phenomena closely related to those commonly seen under conditions perfectly natural. The development of this theory culminated, so far as the mineral acids were concerned (or supposed to be), in the classification of decay as black, yellow and white—the first having sulphuric acid as its chief cause, the yellow, hydro-chloric, the white, nitric—the rapidity of the destructive process, and the difficulty of handling it increasing in the order named.

3d. Internal caries never became popular except to the extent of being christened chemico-vital. This meant that trouble began internally from causes local or general, and externally from causes chemical. But tooth decay is one, as a noted Frenchman has said, and the same effect cannot follow causes so radically different.

4th. The electro-chemical theory involves, as its name suggests, both electrical and chemical forces, large prominence being given the former. Early and late in the '60s, Bridgman, of England, brought to bear upon tooth decay by electro-chemical means, a large amount of well digested information, and in a series of three papers opened the way for both theoretical and practical deduction since made familiar to the profession through the efforts of Palmer, Chase, Flagg, and men of less repute. That it plays an important part in the destructive process of tooth decay cannot be gainsaid; but such part, it seems to us, should be limited, except possibly in rare instances, to teeth that have been subjected to artificial repair, and especially where the repair has been effected by the introduction or application of metallic substances.

5th. The inflammatory theory is simply the old vital theory in a new dress, with such additions as improvements in the microscope and microscopical research have made possible. It has been before the profession some years, but now bids fair to take its place among theories that have had their day, none of which, by the way, has been advocated more persistently, and while the spell was on, more effectively, than that for which Heitzman is sponsor, and Bodecker and Abbott advocates. It must down, however, and to stay. Other and more accurate results have been arrived at by experiment and deduction that depend much less on questionable interpretation of what is seen under conditions that at times worry even an expert at examinations made with high powers.

6th. The parasitic theory is older than general reading of text books and journals would seem to give it credit. Leber and Rottenstein began their work in '66, finishing it and publishing the results in '68. Magitot's treatise had just appeared in book form, but according to these authors, added little or nothing of value to that already known of the phenomena of dental caries, and especially its cause. Their own work was directed to the study of *Leptothrix buccalis* in the mouths of persons of different ages, and under widely varying circumstances, and until within the last few years the work stood alone in this particular field. But farther back than '41, the date of publication of Sommering's elaborate work on the human body, animal and vegetable parasites as causes of tooth decay had been suspected and to some degree studied. Henle says: "The peculiar appearance of carious teeth, the offensive odor in long-standing cases, arouse the suspicion that parasitic animals or plants may induce the destruction of tissues, especially if one knows what a number of low animal and vegetable organisms swarm even in teeth kept constantly clean." And again: "The facts that contiguous teeth infect each other, that decay may be checked by removal of the affected portions, are easily explained under this theory." Leeuwenholk is said to have first called attention to the vibriones and a kind of filament found between the teeth.

Right here it may be said that the consideration of the inflammatory theory, as represented by its sole advocates, who have made it an American institution, and the parasitic, should be transposed both in point of time and value as a means of explaining some things in tooth decay. This may be so, but the work of Leber and Rottenstein is so assuredly introductory to the latest and best theory known to dentistry that it may be said to have persisted to the present, or come down to us, though for a time obscured by the inflammatory cloud.

7th. Of course, the mere mention of the latest theory brings us face to face with the elaborate and scientific work of our American abroad, Dr. W. D. Miller, whose early contributions on what he seems to have settled down to as his life work, were met with interest by some, indifference by others, and others still by that cynicism that characterizes the man who knows it all, or is too lazy or ignorant to venture an attempt at understanding a thing that calls for knowledge or effort of other than ordinary kind. This class of individuals wanted to match opinions, and point out that the theory made much of by Miller had been at least suggested by others long before. They met with unexpected rebuff when Miller told them that he was studying tooth decay, and even then deep in the attempt to ascertain its cause; that he had neither the time nor disposition to discuss opinions, nor to quarrel with anyone who had "guessed" or "almost guessed," at some time, the same thing. He was ready, however, to meet any and all criticism of his experiments, and deductions therefrom, if advanced in the interest of the subject under discussion, but would not be turned aside by anything foreign to it. This, it seems, shut off all carping from the very first, and since that time the wind-mills and paper-makers of the profession have kept out of harm's way. His results are more or less familiar to us all, through the *Independent Practitioner* and *Dental Cosmos*, and judging by the man's capacity for work, designing of apparatus and devising of methods, he will not only practically finish the work of determining the nature of the cause of decay of the teeth, and the conditions that favor its destructive effects, but also put us in the way of handling this affection that the loss of the dental organs may, in a great many of the now all but hopeless cases, be indefinitely postponed.

He finds that the great majority of organisms found in the mouth are capable of producing acid from cane- or grape-sugar, all perhaps when favorably conditioned. Butyric acid exists as a mere trace, and acetic acid is not found above 85° F. Lactic acid, however, appears to be always present, and this product of lactic acid ferment is the agent mostly concerned in caries. That the affection is infectious as between teeth of individuals, or the teeth of the same individual goes without question, a fact that we almost unconsciously concede in the latter case when, finding a cavity on the proximal surface of one tooth, we probe, or try to probe, the surface of the tooth adjoining. What we find here we demonstrate easily in the laboratory, the means being certain apparatus, suitable material and carious teeth.—*Proceedings of District Society.*

NATIONAL ASSOCIATION OF DENTAL FACULTIES.

The seventh annual session of the National Association of Dental Faculties was held at Excelsior Springs, Mo., commencing Monday, August 4, 1890.

The following colleges were represented:

Baltimore College of Dental Surgery, M. Whilldin Foster.
Boston Dental College, Wm. Barker.
Chicago College of Dental Surgery, Truman W. Brophy.
Kansas City Dental College, J. D. Patterson.
Missouri Dental College, W. H. Eames.
Ohio College of Dental Surgery, H. A. Smith.

Pennsylvania College of Dental Surgery, C. N. Peirce.

University of California, Dental Department, C. L. Goddard

University of Iowa, Dental Department, A. O. Hunt.

University of Michigan, Dental Department, J. Taft.

University of Pennsylvania, Dental Department, James Truman.

Vanderbilt University, Dental Department, D. R. Stubblefield.

Louisville College of Dentistry, A. Wilkes Smith.

Indiana Dental College, J. R. Clayton.

Dental Department of Southern Medical College, L. D. Carpenter.

Dental Department of University of Tennessee, R. B. Lees.

University of Maryland, Dental Department, John C. Uhler.

Columbian University, Dental Department, H. B. Noble.

On motion Dr. J. D. Patterson, Kansas City, was elected secretary *pro tem.*

The following resolution, offered by Dr. Hunt, was adopted :

RESOLVED, *That in all colleges of this association students to be graduated at the expiration of two years after admission must enter the school not later than twenty days after the opening of the regular session following this meeteng.*

The amendment to the constitution laid over from last year, providing for changing the name of the association to American Association of Dental Faculties, was lost.

Applications for membership laid over last year, under the rules, were taken up and the following were admitted : Royal College of Dental Surgeons of Ontario ; College of Dentistry, Department of Medicine, University of Minnesota (represented by Dr. W. X. Sudduth) ; American College of Dental Surgery (represented by E. P. Hazan).

The following applications for membership were laid over under the rules : Dental Department of Howard University, Washington, D. C., and College of Dentistry, University of Denver.

The resolution offered by Dr. Patterson and laid over last year under the rules was taken up, amended, and adopted as follows :

> *Resolved*, That after the session of 1890–91 a diploma from a reputable medical college shall entitle its holder to enter the second course in dental colleges in this association, but he may be excused from attendance upon lectures and examinations upon the following subjects : general anatomy, chemistry, physiology, and materia medica, and therapeutics.

Dr. Marshall's amendment to the constitution, providing that in all matters not in conflict with Article V of the constitution a majority of the colleges belonging to this association shall constitute a quorum, was taken up and adopted.

The following resolution, offered by Dr. Hunt, was adopted :

Resolved, That we recommend that students take two full courses in studies of a general character, such as anatomy, physiology, chemistry, general principles of surgery, and materia medica and therapeutics, and three courses in those of a special dental character.

Dr. Goddard offered the following resolution, which was adopted :

Resolved, That final examination may be taken at the end of the second year in three general studies.

The following offered by Dr. Truman last year and laid over under the rules, was adopted :

Recommended, That for a full annual course of lectures the minimum sum of college fees be $100 ; that diploma fees be omitted, and an examination fee of not less than $25 be substituted therefor and made non-returnable ; that a matriculation fee of $5 be charged annually. Special-course fees to be $10 for each branch taken, and $5 matriculation fee.

The following officers were elected for the coming year : L. D. Carpenter, Atlanta, Ga., president ; W. H. Eames, St Louis, Mo., vice-president ; J. D. Patterson, Kansas City, Mo., secretary ; H. A. Smith, Cincinnati, O., treasurer ; J. Taft, Cincinnati, O., Truman W. Brophy, Chicago, and A. O. Hunt, Iowa City, Ia., executive committee.

The following committees were appointed : James Truman, Philadelphia ; Frank Abbott, New York ; and John S. Marshall, Chicago, *ad interim* committee ; J. A. Follett, Boston ; D. R. Stubblefield, Nashville, Tenn.; A. Wilkes Smith, Richmond, Ky., C. L. Goddard, San Francisco, committee on schools.

Adjourned to meet on Saturday, August 1, 1891, at 10 o'clock A. M., at the place appointed for the next meeting of the American Dental Association.—*Dental Cosmos.*

CORRESPONDENCE.

[LETTER FROM DR. B. H. CATCHING, ATLANTA, GA.]

"SAW WOOD AND SAY NOTHING."

The time of "meeting" with us, "way down in Dixie," is over for the year. We don't make much fuss, nowhere near as much as you fellows, but we "get there" much the same. There is an old Georgia saying : "Saw wood and say nothing." We are practicing that right along, but not with old saws, understand.

We wish more of you fellows would not be so ceremonious, but come to see us ; we would treat you well. It is to our pleasure and profit that Drs. Taft, Patrick and others meet with us year after year.

We were delighted to have father Atkinson this year. What a wonderful man he is! For a long time he has been far above his profession, we have thought, and now that we are beginning to see the land he has been viewing so long and patiently, we feel that deep ignorance has been ours. It is a pleasure to note the great defference paid this patriarch. Long may he live to do honor to our calling. The Georgia dental society felt highly honored that the G. O. M. should travel eight hundred miles to be with us. He labored with us, as is his custom wherever he goes. Twenty years ago I stood at his chair in a dental infirmary, and saw him operate with the mallet. How forcibly I was reminded of that time, when, at our State meeting, he took off his coat and operated in a similar manner. He has lived to do one thing, and that at our meeting, that he will probably never do again: He filled a tooth with foil made from gold taken, some of it, from the very streets of the city in which the clinic was held. Score one for Georgia, will you. Can any other society boast of using its native gold? Some might, but they lack the enterprise characteristic of us. "Saw wood and say nothing." This gold was made for us by that celebrated maker of foils, Rowan. Gold mining is only one of our industries. We ship you cotton, raw and manufactured, sugar, syrup, rice, tobacco, iron to Pittsburg (just think of it), granite, marble, emery, and other things. While the politician who lives in the lowest scale of human existence spits his venom toward us, we are "sawing wood and saying nothing."

Come down next year, and see if you don't fall in pleasant places. I now entend to you and yours a most cordial invitation. We are fond of meeting on the "deep, deep blue sea," so next year the Georgia society will meet on St. Simons Island, where the spicy breezes of the Antilles will delight us, where the magnolia will majestically bloom over us, and the mocking bird in the bright moonlight sings us to sleep. The Southern will meet at Moorehead City, N. C., where beauty and chivalry have so long mingled. Come, brother Line, and with us sup and dine. We will quaff the bowl and never grow old, singing the songs of "Auld lang syne."

The Georgia meeting was a grand success. Gainesville, the queen city of the Blue Ridge, did her best for us, and well she did it. We read, we climbed, we spoke, we ate, we drank, and breathed the pure mountain air. Though the place of meeting was in a mountainous country, where you might not expect to find much appreciation of dentistry, yet we found the people, through the indefatigable labors of Adair and Ryder, educated up to the highest points. Implantation and crown and bridge-work they are more familiar with than many city dentists' clientelle. We found there an humble minister of the gospel, who took the floor in our meeting by unanimous vote, and showed more familiarity with the higher subjects in dentistry than some of our professionals. He showed such familiarity that storms of enthusiastic applause followed his utterances, especially when he so highly complimented the work of the dental profession. That is what I call educating the people. Drs. Adair and Ryder find their people seeking knowledge, and aid them by short lectures and the loan of books and journals. I mention this, Mr. Editor, not in a boast, but to show what can be done if dentists as individuals will do it. No slip-shod can go to Gainesville and get a practice. We "saw wood and say nothing," yet I am talking a good deal out of school. Last year a committee was appointed to prepare an address to the public on the "Formation, growth and care of the teeth," to be submitted at this meeting. It was done, and ten thousand copies of it ordered printed for distribution by the dentists. "Saw wood and say nothing."

The State meeting closed with a grand banquet, at which beauty and chivalry joined in merry making. Gilson, of Temple Place, Boston, was with us. Don't tell any one, but he certainly was enraptured; I'm sure he can never forget the occasion, nor his friends. May he come again. We could not give him beans, but we gave him watermelon, a half or a whole one, just as he liked. We hushed his cry for beans with this luscious fruit.

We adjourned to meet the Southern Dental Association in Atlanta, July 15th. They came from all quarters, North, East and West. For four days we talked and worked. John Storey, of Texas, wielded the gavel as only John can. If any thing or any body got in his way, he simply turned his broad horns on them and they moved. Some wanted to compare him to Reed, but we wouldn't stand that. The business moved along, and every body was happy. Father Atkinson was still with us. Taft, Patrick, Haskell, Ottolingui, Stockton, J. W. White, and others I cannot recall, were here. We enjoyed their visit, and told them our latch strings were always out. We had good papers, one from France and one from Germany. These countries can meet harmoniously on neutral ground. What an universal brotherhood; all engaged in the same noble calling, with the single purpose of benefitting humanity. Right here comes in the difference between the professional and the charlatan. The former strives to benefit humanity by every power he possesses; the latter to benefit himself, and himself alone; hence you never see him at meetings, neither do you find his name on the subscription lists of journals. The one, in his operations, sees only the operation ; the other, in his operations, sees not the operation, but the fee.

Never did a meeting have better clinics. This was due to Dr. B. K. Luckie, of Mississippi, the man whose modesty is that of a woman, but whose work was that of Hercules. For his worth and work the Society would have unanimously placed him at its head but "No," said he, "I am bound to my State association with a responsibility that cannot be hindered. I thank you, but I must decline the honor." How often have you seen men decline such honors, preferring the lesser to the greater. The offers of honor in our associations should go to the workers every time ; the politician should be remanded to his mire and kept there. Personal ambition has destroyed nations.

We inaugurated a move at this meeting that will surely redound to the credit of the dental profession. Through Dr. Richards, of Knoxville, Tenn., who has been so energetic in this matter, a committee consisting of one from each State was appointed to look after a permanent habitation for the association. The idea is to buy the ground, and build suitable buildings for holding the meetings annually. Somewhere in the North Carolina mountains, or of East Tennessee, we hope to locate our dental Chautauqua, at which we will assemble, not for a few days, and merely touch on important subjects, but where we will stay three or four weeks, to teach and study dentistry. We will camp on the ground, and go prepared to work. Between sessions, courses of study and investigation will be carried on from the operative, mechanical and chemical to the histological and microscopical. We will have in reality a post graduate school. Before long a certificate from the Southern Dental Chautauqua will be sought after far and wide. It must issue on merit only. Come and unite your forces with us, and invite others to come, too.

DESCRIPTION OF THE METHOD OF SETTING UP THE APPARATUS, THE NECESSARY ARRANGEMENTS TO BE MADE, AND THE USE OF THE VARIOUS APPLIANCES IN PHOTO-MICROGRAPHY.

BY DR. RODERICK ZEISS, JENA.

[Translated Expressly for the Odontographic Journal.]

(*Continued.*)

B. LAMPLIGHT.

As I have before explained, lamplight for photography has the disadvantage of too little intensity. Offsetting this detriment is a manifest advantage which it always has as a light source, the consideration of which does not admit of being overlooked. This advantage is a double one.

Thus during a great part of the year, the sun is hidden by clouds, and even during the days, that may be counted, in which, undimmed by clouds, it is available for our work, its intensity varies hourly. As is well known, the actinic action of the sun's rays increases up to its highest point in the heavens, as well during the day as during the year, and diminishes with the declining of the sun ; further, the sun never stands still for a single second, making the use of the heliostat necessary to our own work. Lamplight is always available, ready for instant use, offering an always equally constant intensity and perfectly unvarying light source, two advantages especially valuable to the novice. For such, also for cases in which great magnification of the image is to be considered, the use of lamplight is therefore to be recommended. In deciding upon the choice of a lamp it must be considered that the degree of clearness is not the only thing upon which it should be based, as this depends only upon the size of the flame ; the fact is familiar that even an entirely red light appears dazzlingly white to the eye if the producing flame is very large and intense. The choice should rest only and solely upon the lamp producing a flame, of which at least part admits a wholly white light. Every one is aware that in the department of illumination by gas as well as that bv petroleum, considerable improvement has been made in modern times, so that it is easy to obtain a lamp answering to the nccessarry requirements.

The employment of the lamp takes the place of sunlight in the technique before described by projection of the image of the flame in the object plane, only it is desirable to permit so much of modification of this technique that a reduced image of the flame is projected by a large biconvex lens, and this is used in the first place for throwing up the image in the object plane by means of a condenser in the ordinary way. This arrangement permits the lamp to be in tolerable remoteness from the microscope, guarding the latter against the heat rays which are capable of effecting finally a variation in the setting of the objective.

The special regulating of the illumination is now completed in the following manner :

The lamp is placed about 1½ Metre from the microscope, in its optical axis, the collecting lens set up between microscope and lamp so that a reduced image of the flame, about ¼ Metre distant from the condenser, is produced upon the ground glass placed in the diaphragm stand for this purpose. The condenser is now directed upon the grain of the ground glass, which is visible in the microscopic image; if the grain be too fine, single pencil marks are made upon it, which are then easily observed. After slipping away the ground glass, in its place appears the image of the flame in the object plane, and is so shifted by sidewise movement of the collecting lens, that its clearest and most uniform part directly covers the object to be photographed, which is thus thrown out sharp and dark upon the flame image, as in the use of the sun image. Then should follow the redisposition of the systems, respectively, insertion of the strong system used for the photographing, quick setting up, testing of the illuminating cone by opening and shutting the diaphragm accurate correction in regard to glass cover and tube length in the kind and manner previously described. Of other artificial light sources, the lime light is yet to be mentioned, which recommends itself in general for photo-micrographic purposes, by its intensity, and in particular because of the steadiness of its light points render it suitable for application direct. Being myself without especial experience of its availability, I just now cite the excellent work of Dr. Paul Jeserich, "*Photo-micrography upon Bromide of Silver Gelatine Plates by Natural and Artificial Light, very particularly in regard to the Lime Light.*" as evidence that the latter is warmly commended for our purpose, and refer all interested to this work, which the photo-micrographer advised to procure for the sake of its other contents indeed, but especially of the introductory treatise on photographic technique.

Undoubtedly the accomplishment of the above described important work of procuring good pictures has been made extraordinarily difficult by the hitherto customary mounting of the entire apparatus upon a board (on which the camera was most immovably screwed into the bargain) where it could only be manipulated in a stooping posture.

The separate mounting of the camera and microscope effected by me, permits this manipulation in the easiest posture, seated before the microscope upon a joint stool adjustable for any hight of the body, with the camera sliding back and forth, and thus facilitates the operation extremely.

2. *Employment of the light source indirectly* (*with ground glass*).

A. SUNLIGHT.

The direct use of sunlight may be disadvantageous:

1. When by the employment of the strong system only moderate enlargemenhs are aimed at, and these are to be takea by means of

very sensitive dry plates. In this case direct sunlight works violently that without a very delicate drop shutter, it is difficult to reduce the exposure to a minimum.

2. When the enlargement at pleasure by a weaker system comes in question ; the sun image of the above described kind projected in the object plane. which, as we know, only covers the field of the strong system, is now, setting aside its here likewise excessive intensity, too small for the illumination of the object to be photographed.

Under both conditions the indirect employment of sunlight affords the necesary remedy, since on the one hand it diminishes considerably the intensity of the light, and on the other permits the even illumination of any desired part of the object.

The indirect use of sunlight requires nothing more than the introduction of a ground glass slide between mirror and microscope. This slide belongs to the apparatus and is applied to the optical stand by means of the diaphragm stand next the microscope. Thus the pencil issuing from the heliostat and finally reflected from the second mirror into the optical axis, does not pass directly into the microscope, but illumines this slide, that then transmits toward the microscope a diffuse, yet always moderately intense light, and thus in its turn serves as light source for the illumination of the object, while it is sharply reproduced in the object plane by the achromatic condenser. By placing upon the optical table the second diaphragm stand with diaphragm of different sizes, the size of the artificial sunslide thus produced may be varied and so regulated that the reproduction thrown into the object plane exactly fills the field of the objective used in photographing.

B. ARTIFICIAL LIGHT.

The magnesium light is chemically pre-eminently useful for photographic purposes, because it has an intense whiteness, and therefore rays from every color of the spectrum in equal distribution. It is made use of in many fertile ways, and renders excellent service in the photographing of interiors by instantaneous exposure (flash light). It was especially recommended for photomicrographic impression by Prof. Fritsch, who has achieved such distinguished results by its aid as a light source. In the hands, too, of other skillful photomicrographers, it has brought good success, and supplied the need of the electric arc light. I have never myself, however, though in possesion of an excellent magnesium lamp, had the resolution to use it for taking large photographs, as the continual wavering in the intensity during the burning of the magnesium thread makes me uneasy during the projection and the exposure.

On the other hand I can recommend from fuller conviction the electric arc light, for indirect use in photomicrography.

As is easy to conclude from the above, the indirect use of the electric arc light is such that it illumines the often mentioned ground glass slide, which is then projected into the object plane in the same manner as was described in the use of indirect sunlight. The illumination of the slide itself is attained, the image of the glowing carbon points being thrown upon it by a corresponding condenser system. In regard to the latter it is next to be observed, that the positive carbon point glows with unequal intensity and in wider extension than the negative, and that in consequence it is desirable in using them, so to adjust the setting of the carbons, that they do not as in the ordinary use of the lamp stand vertically, but obliquely to each other ; thus the glowing part of the positive point will be turned full in the direction of the microscope, while the glowing part of the negative point will be turned in the opposite direction.

The condensing system serving for the projection of the image of the carbon points upon the ground glass, is, unlike those hitherto used for similar purpose, constructed upon a combination of two hemispherical lenses, as may be seen in the annexed drawing.

That part of the lens toward the carbon points, which effects the collection of the rays diverging from them in a beam of parallel rays, and is correspondingly set up for all times at the most suitable distance from the lamp, (which can easily be determined by experiment,) turns thereto a concave surface for the spherical aberration of the lamp. The part of the system next the microscope, which reunites the parallel rays into an image, is held movably in a sliding case, which permits the moving of the converged image through a tolerably wide field in the optical axis. When therfore we have adjusted the first part of the lens system, which as a whole is mounted upon the optical stand on a standard movable up and down by rack and pinion, in the manner above indicated, we slide the second part in or out until the image of the positive carbon point appears as a distinct bright oval spot in the middle of the ground glass slide, as it stands at the usual distance from the microscope.

The bright spot, projected into the object plane by the achromatic condenser, attains a size to cover the field of a strong system and represents at the same time the maximum intensity which can be reached. For weaker systems, which on the one hand will have a larger proportion of the preparation illuminated, and on the other hand require less intensity, the bright spot is enlarged at will upon the ground glass by drawing out the second condensing lens, which draws its focus nearer the microscope.

It is a familiar fact that the electric arc lamp emits, besides intense light, very strong heat rays ; for their absorption a cold chamber with walls of mirror glass and filled with distilled water must be placed before the collecting lens. In order to protect the first collecting lens from the quivering heat and the sometimes showering sparks, it is covered by a mica window fitted to it.

For this kind of illumination every electric lamp serves, in which the carbon points are regulated by a corresponding mechanical automatic adjustment, and hence do not vary their standpoint while burning. We know that this is perfectly attained in none of the lamps constructed up to the present time ; I have therefore in my apparatus mounted the lamp by a screw movable in hight, and can thus correct small variations without difficulty. On account of their exact burning and their elegant form, I prefer the Hefner-Alteneck contact lamps furnished by the firm of Siemens to all other constructions,

3. USE OF THE LIGHT SOURCE FOR ESPECIAL PURPOSES.

a. *Taking photographs of great focal length and large field* (*without projection ocular*).

For the taking of larger photographs of microscopic objects under very great magnification and the largest possibe field, the firm of Zeiss has lately constructed an objective of 75 Mm. focal length, which is designed for direct use without projection ocular. The two associated representations in Plate IX were executed with the same ; unfortunately in this case the print has not restored the finer details, which are in the negatives in my possession. Impressions with this system are only different in the method of illumination, which is described as follows :

Regarding the light source for this purpose, the above mentioned rules are of value ; according to these is adapted the indirect use of the electric arc lamps (or of magnesium light) or the direct use of the petroleum lamp. The latter maintains, as the ground glass by indirect use, a circular limit through the interposition of a diaphragm whose diameter varies always according to the size of the illuminating cone which one expects to use. Only in the application of the light source is a change recommended, which is conditional upon the altered design of the newly constructed objective. While dependence is placed, in the system of less focal length, upon the illumination of a proportionally small part of the preparation, we have in this system, whose great focal length necessitates its introduction within the tube, as seen from the sketch subjoined, a field of about 15 Mm. to illumine equally. That this is not effected by means of the condenser system, is evident ; in this case the use of a collecting lens of great focal length is far more necessary ; this being fixed in a correspondingly fitting case inserted in the rocking part of the illuminating apparatus, in the place of the condenser system which has been removed, and in such a position that the image of the light source falls not in the object plane, but in the center of the objective. By this arrangement the illumination with equal clearness of the entire field of the objective is obtained.

In especial cases of arranging the illumination for the use of the 75 Mm. system, or as weak as that, the manner of procedure is as follows : After the light source has been set up in the usual manner in the optical axis, the object to be photographed is placed upon the object stage of the microscope, and illumined by the insertion, at random in the apparatus, of the small collecting lens which comes for this purpose. Next the under end of the tube, which usually takes the objective, is unscrewed, whereby the tube sheath is open toward the object in its full diameter. Then the draw tube is likewise inserted and the system 75 Mm. fitting the light lock, screwed on in its place. Now the objective is so inserted with coarse adjustment by rack and pinion that an image of the object is produced upon the ground glass slide of the desired size in regard to corresponding image distance.

The image of the light source is now projected by means of the small collecting lens which is moved until the image falls distinct in the center of the objective. Whether this is exactly the case and which part of the objective aperture thus comes into use, is regulated in the following manner :

1. The placing of the objective in regard to the image plane (by a quick adjustment) is easily determined by measure. In adjusting it a sheet of paper is held up, after room has been made for it by moving the tube ; upon the paper is thrown the image projected by the collecting lens, and it can be easily established in what position of the collecting lens the image of the light source is sharpest at a given distance from the object.

2. The centering of the light image is attempted by observing it in the objective itself now quickly readjusted. If the light source is directly in the optical axis, and a correct image is projected in the object plane, the light image stands exactly in the center of the

objective, where it remains stationary, even if the observer moves so as to bring the eye sidewise from the optical axis. If the light image stands outside the center of the objective, the illumination is not axial, and must be correspondingly corrected.

3. How much of the aperture of the objective is taken up by the illuminating beam, is ascertained by looking into the tube in the manner before described, when that part of the objective which is directly occupied by the light source, is seen clearly illumined, the unoccupied part dark. Regulation of the beam, for which the formerly explained general rules are applicable, is effected by varying the light source in the diameter of larger or smaller diaphragms placed before it, until its image occupies only about ⅓ of the objective.

The foregoing sketch shows with sufficient clearness the position of the objective, that of the collecting lens and of the light source, and the direction of three rays, one of which issues from the center of the light source, the other two from its edges.

b. *Photographing with "oblique" light.*

That the practice of microscopy calls to its assistance oblique illumination only in extremely rare cases, is well known; it being left almost exclusively to those branches which are concerned with the resolving of scales of lines and other regularly arranged markings, as shown in the diatoms used among others as test objects. But the study of these objects plainly shows that by the aid of oblique light details can be made certain, which the purely central illumination does not even permit to be guessed, and the former should hence offer inducement more often than is the case, for its use as well in the study of histologic objects. It has therefore been taken into consideration on good grounds, in the construction of Abbe's illuminating apparatus, that the change between central and oblique light be made as easy and convenient as possible, and that in the use of oblique illumination, the entering angle of the oblique beam may be increased to the extreme limit of the angle of aperture of the system for homogeneous immersion. The latter consideration has led, since the introduction of the system of 1.40 num. aperture, to the manufacture of a new condensing system of as much greater aperture. On the same ground I am induced, in commending illuminating methods for photomicrography, not to leave unmentioned oblique light for this purpose.

I have myself, since it is yet undecided how far the oblique illumination is employed to advantage in the study of histological objects, made the first attempts only with diatoms, and even these have limited to the taking of such images as show their characteristic appearance only by the use of objectives of the largest aperture, and the most oblique light. We know it is possible to reproduce upon the photographic plate, by means of ultra violet rays no longer visible to the eye, details of these objects which are wont to escape the observation with the most searching microcsopic oculars. Thus Privy Counselor Koch showed for the first time the flagella of certain micro-organisms by the help of photomicrography ; in like manner Van Heurck succeeded in resolving the cross stripes of the Amphipleura pellucida into pearls.

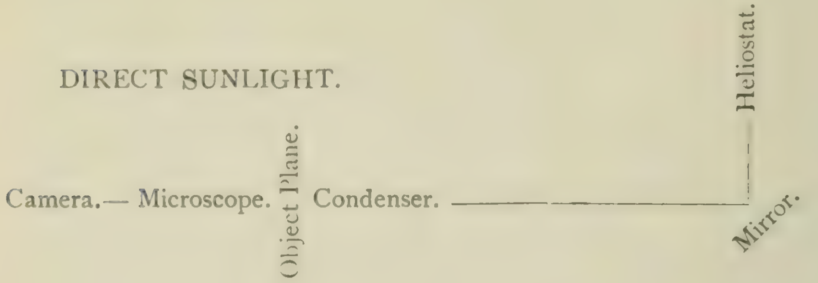
Plate IX shows a photograph made by me, of the cross-stripes of this latest known test object, which appear in the next plate, by corresponding modification of the light, into pearls. Upon this resolved plate is also briefly indicated, with what objective the impressions were made, and what methods of illumination came into use. I employed direct sunlight for it, because, as I have often before explained, my experience has taught me that for strong systems and high magnification good results are most easily reached by the use of the strongest available light source. The usual condensor system of 1.40 num. aperture served to project the image, with one of the cresent shaped screens accompanying the same, which only permitted entrance into the condenser system to that part of the pencil of rays which fell upon the extremest outer zone of the condenser. It is self evident that the condenser system was connected with the object slide by a drop of cedar oil.

The condenser system of 1.40 num. aperture is for these impressions superior to the achromatic condenser, because the latter only affords 1.0 num. aperture, the angle of aperture of the oil immersion system being thus not fully occupied ; and since in the employment of only a small part of the zonal edge the spherical aberration of the ordinary condenser does not become an impediment to such a degree as in illumination with a large cone.

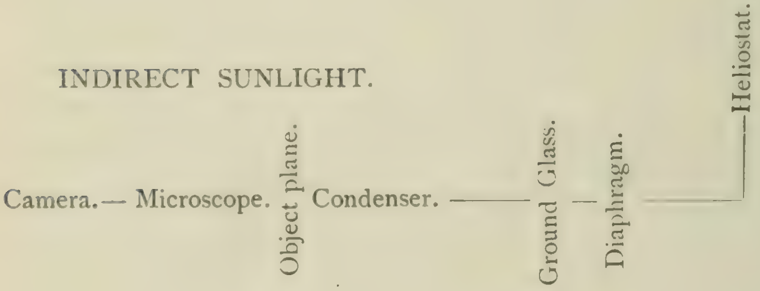
In illumination by other light sources the process is similar, but it must be considered that weaker light sources with oblique direction of a proportionally small beam, necessitate a very extraordinarily long exposure for obtaining highly magnified images. Thus Dr. Neuhass produced excellent photographs of Amphipfleura pellucida by lamp light, extending the exposure to many hours.

The following plan serves to illustrate the different methods of illumination just described :

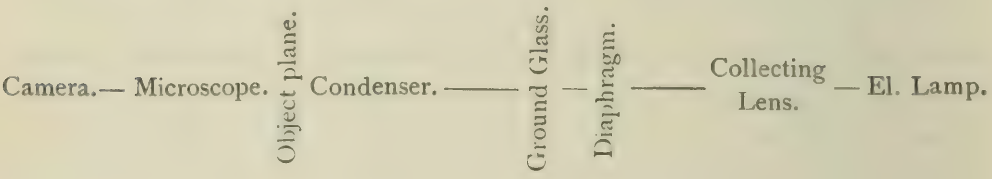
DIRECT SUNLIGHT.



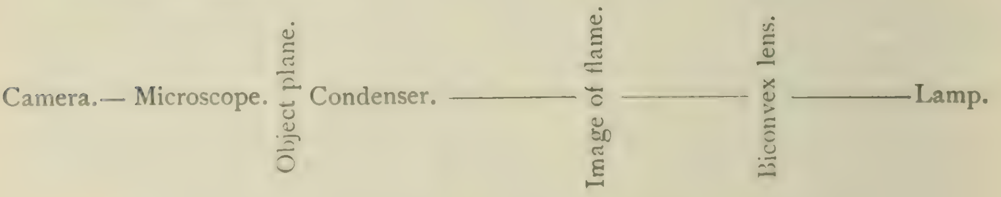
INDIRECT SUNLIGHT.



INDIRECT ARTIFICIAL LIGHT.



DIRECT LAMPLIGHT.



B. THE PROJECTION OF THE IMAGE.

I. *Signifigance and purpose of the projection ocular.*

The oldest method pursued in photographing microscopic images, consisted in the direct projection of the objective image upon the photographic plate, which was always placed at a longer or shorter distance from the objective, according to the amplification desired.

With the increasing requirement for sharp definition of the image, and the advancing improvement of objectives, however, the chief defect inhering in this simplest method, was brought into greater and greater prominence. It consists in the circumstance, that by this method, as the necessary distance of the plate is almost always much greater than the length of the tube of the microscope in ocular observation, the objectives become operative through the action of rays entering them in different direction from that for which they are especially and chromatically corrected. Thence is unavoidably occassioned a considerable deterioration of the image, which indeed can be lessened by the use of a correction setting, but by no means compensated. Moreover, the method spoken of has the practical disadvantage that figures of high magnification, 1,000 and over for example, necessitate either objectives of very short focal distance or else inconviently great distance of the plate.

Both faults were first successfully overcome by using a concave lens (amplifier) spherically and chromatically corrected, back of the objective. If such a one be brought to the right distance from the objective, it permits the same direction of the rays, and thereby the same correction, obtaining in ocular observation with the normal tube length, to remain unchanged in projecting the image at any desired distance. Besides, such a concave lens at suitable focal distance, raises the image to a two or three times greater magnification, than the single objective would secure at like distance of the plate. Its application is without doubt conformable to the purpose and feasible, although not entirely simple (if the best correction of the objective is really secured), and hence not convenient, since the concave lens has to be inserted deeply in the tube of the microscope.

The often attempted projection of the image by means of the ordinary oculars at the end of the tube, also obviates, it is true, both the faults mentioned in direct projection of the objective image ; but it has always produced unsatisfactory results, as such oculars—the achromatic and aplanatic not excepted—used in this way, almost always introduce considerable errors of the spherical or chromatic kind, which impair the precision of the final image.

Lastly is yet to be mentioned the practice of Van Huerck, which takes up again the earliest method of immediate projection through the single objective. By it the photographic plate is brought to the same distance from the objective in which this projects the image for ordinary ocular observation, in order to preserve unchanged the exact correction. The naturally very small negative thus obtained is again magnified by a photographic objective of greater focal distance. As is shown by the photographs taken by Van Heurck, this metood is capable of producing good results, having an especial advantage in certain cases, because of shortening the first exposure. On account of the small scale of the first impression, however, it is certainly quite difficult, and on account of the necessary after amplification, always a somewhat detailed process.

I have for my own part, at least for higher magnifications, brought into exclusive use the new method which is rendered feasible by the "projection oculars" constructed in this manufactory upon Abbe's plan. The ability to do this has been sufficiently demonstrated in the annexed copies from original protographs; after my own personal experience, however, I think I say from knowledge, that this method both in respect to certainty and facility, at least with the adjustment of instruments here described, leaves nothing more to be wished for.

The essential thing in this method consists, as in correct use of the amplifier and as in Van Heurck's method, in leaving the image produced by the objective itself at exactly the same distance at which it is thrown for the ocular observation; but this aerial image is projected magnified upon the sensitive plate, by an especial system of lenses, expressly corrected for this kind of photographic use. To this lens system is given the outward form of an ocular, in order that it may be, like an ocular, combined with the objective by insertion in the tube. In the location of the point of intersection of the transmitted rays and in the manner of correction, it is, however, entirely different from the real ocular. It is in effect an objective of 60 Mm., respectively, 30 Mm. focal length, spherically and chromatically corrected after the manner of photographic objectives of greater dimensions, and joined with a collecting lens. This system removes, besides, in the projected image, like the compensation ocular in ocular observation, the difference in intensity of the various colors, which the stronger microscope objectives leave uncorrected in the direct image.

The focal length of these projection systems is so chosen, that with the continental tube (of 160 Mm. tube length) it increases the magnifying capacity from two-fold to four-fold direct magnification of the objective at like plate distance; with the English tube (250 Mm. tube length), however, it is three-fold to six-fold. It thus permits even with the apochromatic objectives of relatively greater focal length, very highly magnified images, without the necessity of too great great plate distance.

II. *On the use of the projection ocular.*

After adjustment of the preparation with the compensation ocular, this is removed and instead the projection ocular inserted, and the camera, which moves on rails, brought in contact with the microscope. The light tight connection is made as shown by illustration, page 7, after the adjustment of the projection ocular to the distance of the image plane, which is accomplished by turning inward and outward the front system of the ocular until a clear image is projected on the camera screen. Should the objective have been previously adjusted with an ordinary compensation ocular, then the image, after the insertion of the properly corrected projection ocular, will be nearly sharp on the plate, so that merely adjustment by micrometer screw will be necessary. This latter I manipulate from the plate by a throw-on and throw-off Hooke's key (similar to that used on astronomical instruments), whose revolutions are controlled by rack and pinion as recommended by Prof. Fritsch, and then transferred to the micrometer screw, the head of which is also provided with teeth. The Hook key is held in a horizontal position by a chair back or something of that kind, and is protected from interference with the camera, which possibility after connection with the microscope is altogether done away with, so that manipulation can follow without the slightest vibration of the microscope or the camera. After careful trial of a whole series of other contrivances, partly self-made, I have returned to this method, simple, but most perfectly adapted to the end sought, and have made the greater part of my exposures accordingly.

The control of the fine adjustment is made in the ordinary way, by means of a magnifying glass, which is adjusted to the inner side (nearer the microscope), of the ground glass ; the latter being made of transparent mirror glass, which carries on the microscope side a diamond marked cross. The ground glass is only used for general control of the image.

If the light be sufficient, the method advised by Nachet, of viewing the direct image upon a plate holder inserted and covered with white paper, is to be recommended. This method is especially applicable for low magnifications, being in such cases attended with remarkably good results, as the image thrown upon the white paper is raised in very distinct relief, thus affording a better judgment than when it is reflected upon ground glass. The plate holders accompanying these cameras are therefore covered upon the microscope side with white paper, and the camera bellows so arranged that it can be opened at the plate holder end to permit a view of the surface of the paper.

As in observation of objects by means of the compensation ocular, so now in the fine adjustment of this image it must be submitted to a sharp criticism in respect to:

1. *The qualitative properties of the image.*

The quality of the image will now show whether the regulation of the light, especially of the illuminating cone, has been correctly accomplished, since if too large a cone has been employed, only a small part of the image is available, while on the other hand too small a ray gives an image weak in its details and having its outlines bordered by diffraction fringes. Defects in correction of the cover glass and tube length also show themselves in the image, which of necessity usually reproduces as closely as possible, appearances perceived through the compensation ocular. Lastly we must see that the image is free from reflections. Reflections appear upon the plate as more or less bright rings or stripes, and are the familiar cause of much trouble to the photographer, as they are reproduced from the plate with only too scrupulous fidelity, and the image more or less disfigured. Their avoidance is therefore one of the chief aims of the constructor of photographic apparatus and lenses, and it is needless to say that this point received careful consideration in the construction of my own apparatus. In the purely optical part of this the problem has been so far happily solved, that the projection ocular at the same time fulfils the purpose of intercepting and rendering ineffective all the reflections originating in the setting of the objective or the tube shaft. Moreover, the tube of the photomicrographic stand is partly for this reason of unusually great diameter.

2. *The quantitative properties of the image.*

a. The degree of enlargement given by a lens combination at a fixed image distance, is exactly determined, as we know, the image of an objective micrometer in the occuring image distance being by means of the lens system thrown upon the plate and measured with a scale. The figure which shows how many times greater the image of an interval of the objective micrometer is, than the interval itself, is the numeral of magnification. If we find, for example, that 10 intervals of the objective micrometer (which is divided into hundredth Mm.) are 30 Mm. long upon the image, then the magnification is 300 :

$$\tfrac{10}{100} : 30, = 1:300.$$

To determine in this way the degree of magnification of an image, it is only necessary to hold it by the use of the apochromatic and projection ocular, all depending upon great accuracy. A very near approach to certainty is obtained "by expressing the image distance (from the projection ocular) in Mm., divided by the focal length (so-called) of the objective, and the figures thus obtained multiplied by the number of projection ocular employed" (Apochromatic catalogue of Zeiss). Taking for example, an enlargement of 300, the image being projected by apochromatic 4.0 Mm. and projection ocular 2, at a distance of 600 Mm., then:

$$\frac{600}{4.0} \times 2 = 300.$$

This rule is verified by the following considerations :

Taking at pleasure any lens system of which the focal length is Mm., an image being produced which lies d Mm. distant from the posterior focus (or that on the image side), the linear enlargement of this image is represented by $\frac{d}{f}$ (This is far the simplest, and a strictly correct, rule for determining the degree of enlargement of the image. Other formulas generally given for this purpose, are very complicated in practice, even allowing them to be infallible, and not liable under some circumstances to yield results essentially incorrect.) Thus the apocomatic 4.0 Mm., if used alone for direct projection of the image, would give 1, 100, 1000 of the series after magnification the surface intercepting the image being placed successively 4 Mm., 40 Mm., 400 Mm., 4000 Mm., from the farther focal point of the objective; it is to be noted that in this case the farther focal point in consideration being very near the last lens surface of the objective, the image distance practically may be measured from the farther lens surface. If, however, this objective is joined with a projection ocular, the combination gives rise to two kinds of variation. First, the addition of the ocular system to the objective, causes the farther focal point, that belonging to the image side of the system now operating as a whole, to be no longer directly at the objective, but moves it near to the last ocular lens. In the projection ocular it lies almost exactly in the opening of the ocular cover over the projection lens. Secondly, by the addition of the projection ocular (as indeed by the addition of any other ocular) the system of 4 Mm. becomes changed to a whole system, whose equivalent focus is a certain fractional part of the objective, as ½ or ¼, etc., of the ocular system added and the distance from the object, that is, the tube length. To generalize : from an objective whose focus is f Mm., arises a whole system whose focus is $\frac{f}{y}$, supposing y to represent the occuring figure of operation as 2, 4, etc. This figure is given direct in the series of new (compensation) oculars, including the projection oculars, each being marked. One of this series is known as ocular 2, 4, y, with the normal tube length (160 Mm. upon the standard of the continental model) reducing the focus of the combination to the ½, ¼, or $\frac{1}{y}$ part of the focal length of the objective. Thus ocular 2, for example, in combination with the above given objective of 4 Mm., gives a whole system whose focal length is ½ of 4 Mm., or 2 Mm., and ocular 4 in combination with an objective 2 Mm., gives a system with focal length ¼ of 2 Mm. or 0.5 Mm.

From these two considerations it follows that to bring into use the above cited general formula:

$$N = \frac{d}{f}$$

In the case of employment of a projection ocular for throwing up the image, it is necssary :

1. To calculate the distance of the image plane from the ocular.
2. To introduce as divisor f, the quotient result of dividing the focal length of the objective used by the number of the projection ocular which is the same as dividing the distance d of the image plane from the ocular, by the focal length of the objective, and multiplying the result by the number of the ocular (or this process reversed).

b. *The diameter of the image* upon the plate at a given image distance, depends upon the diameter of the diaphragm found inside the projection ocular, as is the case with the usual image by the use of the ocular for microscopic observation. The diminution of this diaphragm opening has thus nothing to do with the quality of the image, but esthetic considerations may come in, if it is desired to take an image of a certain degree of enlargement upon a smaller plate, with the sharply defined circular boundary which the projection ocular produces upon a larger plate. In this case it would be necessary to cement (with wax) a brass disk with a correspondingly smaller circular opening, to the diaphragm found within the projection ocular. It is evident that the same effect may be attained by inserting in front of the plate holder a tin plate with a circular opening of the diameter desired for the image. A sufficient number of these accompany the apparatus, including the wooden frame necessary for their use.

The above mentioned subject of diaphragms is not to be confounded with the diaphragm mentioned in the catalogue of the firm in connection with the description of the projection ocular and as "ocular cover" on the upper lens of the same, which reduces the width of the angle of aperture, thus influencing the quality of the image.

C. FIXING THE PROJECTED IMAGE BY PHOTOGRAPHY.

I. *The photographic plate.*

All the manipulation thus far described has been brought to bear upon the production of the most faultless possible image upon the plate; the work now in hand has for its object the securing of the most faithful possible copy of the image and enduring existence for the same. This we know is only to be attained by the photographic process, the inherent peculiarty of which, however, places one insurmountable obstacle, in that it does not permit of the reproduction of the natural colors of the image, but is only able to represent them by light and shade in infinite gradations. Even with this limitation, photographic treatment only a short time ago presented such defects as to render its use difficult for the reproduction of colored microscopic images, and resulted in its being employed almost solely for the representation of test objects not colored. These defects consisted in the excessive senitiveness of the plate to dark blue and violet rays, so that it reproduced the rays perceived by the eye to be green or orange colored, as shadows on the picture, while the dark "blue-violet" rays appeared light. The invention of Prof. Vogel first obviated this difficulty, to the extent that it allowed a greater sensitiveness to the light part of the sprectrum, (blue-orange) to be given to the plate, and by this means its light perception was more nearly assimlated to that of the retina. The plates thus improved (whose designation as "orthochromatic" is not, of course, to be taken quite literally), are now produced from many dry plate manufactories, but of special excellence by Otto Perutz, in Munich, and will doubtless sooner or later entirely supplant the older plates sensitive only to blue-violet, as they reproduce colored images in nearly correct values, especially if in their use the effect of the blue-violet rays be still more modified by interpostion of a yellow plate or liquid. They were first used for photo-micrography by Prof. Van Ermenghem, and now constitute for it an indispensable requisite, in all cases where the utmost correctness in reprodution of colored microscopic images comes in question.

The foregoing observations have already indicated by what considerations the choice of the kind of plates for the representation of a preparation, is determined. If we have to do with an object whose characteristics consist only in light and shade gradated at pleasure, as in the diatoms and most other test objects, we use the ordinary kind (even the direct wet treatment, since this does not appear yet to be completely replaced by the dry plates). If on the other hand we have stained objects or those whose natural colors, as in all insects furnished with chitinous armor, already confuse the details to the eye, let us hold fast to the orthochromatic plates. He will be most accurate in the practice of photomicrography, however, who keeps in stock only the orthochromatic plates, and disregarding the somewhat greater difficulty of their manipulation, uses these also for the images of the first named kind. As compensation for greater trouble which their use requires, he will have the advantage of being always able to use fresh plates, which is not to be under valued when we consider that up to the present time the dry plates cannot be kept good longer than about a month.

As to choice of large plates the advice applies on the same grounds, "stick to only about one or the smallest possible number!"

1. *The exposure of the plates.*

The manipulation likewise has a qualitative and a quantative character to be considered, since in the first place, according to the points mentioned in the reference to the orthochromatic plates, there is a question whether to photograph by the use of white or colored light, and the second consideration, which depends partly upon the first, is to determine the length of the exposure.

As to the first question, very perfect results can be reached by the exclusive use of the apochromatics (which require no correction of the focus difference by light filter), equally with the ordinary and orthochromatic dry plates, at least with those lately manufactured by Perutz in Munich, white light (unfiltered) being employed. For more subtile work it is well to use monochromatic light, obtained by using with the ordinary dry plates a blue solution of ammonic-sulphate of copper, and with the orthocromatic plates a liquid colored yellow by picric acid, in a little cup with plane mirror glass sides, in front of the condenser system. By means of the former solution, the light used for illuminating the objects retain only the blue-violet rays, whose effect upon the plate is exactly what is wished, while by the picric acid solution these very rays are prevented from co-operation in the production of the image, this being required by the orthrochromatic plates. Thus in both cases is attained for the production and critical examination of the image the interception ofthose rays whose co-operation is not desired, and the exposure of the plate without them, which cannot fail to be conducive to the securing of a good image.

As the length of exposure depends in general upon the sensitiveness of the plate and the absolute clearness of the projected image (the latter in turn being the resultant of the following factors : light source, aperture of the illuminating ray, aperture of the objective system, degree of enlargement of the image), and is besides exceedingly influenced by the kind of light filtration, this duration cannot be fixed by rule, owing to the working together in practice, of so many unknown but important elements. It is well known that a tolerably large number of measures of intensity have been constructed, with the object of regulating the time of exposure for a given image ; I have tried none of these instruments, because I have found that for my purpose the arranging of a scale of exposure, as in Plate IV, that is of a series of image bands of progressively increased time of exposure, fully suffices for determining the correct time. These impressions are made in the simplest manner, with a special plate holder made for the purpose which, moving on rails, permits the plate to pass in front of a narrow opening, wide enough, however, for criticism of the image, this opening each time allowing the same small part of the image to reach and take effect upon the plate. In developing the plate, it is easy to see after some action, which image stripe is most sucessful, and to know therefore which time of exposure to select for an entire image as good.

2. *The chemical treatement of the plate.*

As I have already remarked, it is not my intention to treat of the purely chemical technique of photomicrography ; the technical works extant in considerable number, afford sufficient information for theoretical study, and the acquirement of the necessary practical knowledge comes about most easily under the instruction of a professional photographer. Besides, the particular rules to follow in using their articles, are given by most dealers in plates. I have therefore limited myself to a brief account of my experience relating to those points in which the professional usually does not know how to give intelligent advice and in which his treatment usually differs from that necessary to our purpose.

The amateur will do well to make his first attempts under the guidance of a professional, with an ordinary camera, taking any object to be found in the room. While in this way he at once gets hold of the purely optical points of moment, he has the best opportunity to note and impress upon his mind : first, the appearance of a good and successful negative during and after development, second, what are the characteristics of an unsuccessful negative, and wherein lies the cause of failure in each case. By examination of the negative obtained according to rule, he informs himself that the highest lights are expressed by deep, opaque blackness, the deepest shadows by perfect transparency, while the middle tones make soft, harmonious gradations of every degree ; the practice shows him that faulty negatives can result on the one hand from either over exposure and under development, or under exposure aed over development (the usual case), on the other hand from exaggeration in both directions at the same time; over exposure with over development, or under exposure with under development. The means of bettering the negative in each case, by strengthening or weakening, are pointed out. Going through with the process of printing gives the amateur the best means of judging of the value of the negative obtained; it is therefore recommended to him to do this at first. When he has attained to a competent judgment as to the negative, he leaves the more important matter of the printing to the photographer.

From this moment success in taking photographs may be looked for, and the work grows easier, at least so far as the present subject is concerned, since from this time it can be decided whether a negative obtained is satisfactory or not. In the latter case, those especial difficulties are beginning, over which the professsional photographer cannot help us, and to overcome which the photomicrographer is therefore left alone. These are set forth in what follows:

a. *Independently of the kind of plates.*

It may happen in spite of apparently entirely correct exposure and development, that the plates show a hazy appearance, the shadows of the image, which should appear on the negative perfectly clear and transparent, seem covered over with grey, so that the print gives a dim picture, full of details, it is true, but without contrast. The reason for this appearance, which is usually the torment of every amateur, driving him to desperate experiments with developing fluids, lies simply in the illumination of the subject; if this is not in exact conformity to the rules before given, it easily happens that besides the light rays necessary to the projection of the image, yet others are conveyed, which as it were overlap the shadows of the image, and thus obliterate their impression on the photographic plate. The remedy for this mishap must therefore lie in still further control of the illumination, by taking especial care to exclude all rays not necessary for the projection of the image, in particular to reduce the size of the light source to the least amount sufficient for the purpose. The development thus furnishes in a measure, a test of the accurate production of the image, and shows that a photographic plate is more sensitive to defects in the same than is the retina.

The appearance just described should not be confounded with a foggy condition of the plates, which similarly affects the picture, but is visible over the whole surface of the plate, even those parts which have not been fully exposed to the light. Every one knows that this trouble originates either in defective quality of the plates (kept too long), or else uncleanliness of the developer, the basin, or the finger (fixing soda), and is easy to trace in either case.

b. *Having regard to the kind of plates.*

Many especial methods of treatment, which the use of the orthochromatic plates makes indispensable, are not necessarily carried out by the professional photographer; the consequence is, that bad results are attributed ordinarily to these plates, and it is tor this reason that up to this time they have found so little use among photographers, although the excellent advantages which they offer for landscape as well, are sufficiently evident. But bad results are easily avoided even with these plates, by duly regarding the peculiarity which distinguishes them from others of the ordinary kind. This difference consists in their being still sensitive to rays admitted to the dark chamber through the red glass lamp shade; so that it is very plain that the direction given by the plate manufacturers —to develope these plates at least during the first minutes, as far as possible in darkness—is well founded, and that bad results only discontinue by more carefully observing this rule.

I proceed, using orthochromatic plates almost exclusively, and losing none worth mentioning, in the following manner:

a. *Development of the scale of exposure.*

After mixing the pyrogallic developer, to which it is evident no retarding fluid (bromide solution) will be added for developing the exposure scale, I turn my lamp nearly out, remove the plate from the plate holder in darkness as complete as possible (it having also been inserted in the dark), and place it in the tray, after I have assured myself by one momentary glimmer of the lamp flame on the plate, that the gelatine side is up. A simultaneous agitation of the tray quickly spreads the developer over the entire plate; after some practice this always succeeds, without the necessity of guiding the the plate after it is in, provided the developer be not too sparing in quantity. Next I assure myself that the developer has wet the whole plate—of course as swiftly as possible—then withdraw, agitating the tray in the hands, to the back of the lamp, so that the tray is wholly in darkness, at the same time counting off exactly one minute by the pendulum of a clock or metronome; after the expiration of this time I give the plate an instant's examination by the lamp turned up somewhat. At this stage of the development the whole scale should appear in the characteristic gradation of the separate image stripes upon the plate. Then immediate turning down of the lamp, twirling and agitation of the tray, with continued counting of the pendulum to the end of the second minute. At the expiration of the two minutes the Azalin impregnation of the plate has so far dissolved that it has again become nonsensitive to the red and yellow rays, and bears an examination without injury by the bright light of the red lamp in front as well as at the back. It can now by this light be seen, which part of the scale has received the most favorable exposure for the image treated, that is, by which the lights have imprinted themselves most darkly upon the negative, with clear and distinct delination of the shadows. Upon the back of the plate it can be seen that the part of the scale recognized as best exposed, shows through in soft outlines, while the bands too little exposed are not yet visible. It is now again developed in the shadow until the lights of the best exposed band have attained the requisite strength, that is, until even bright lamp light does not shine through them, which is the case at the end of 4 to 5 minutes from the beginning of development. From this point the plate is further treated in the usual way, well washed and fixed. Every one knows that to judge when is the exact moment to discontinue the development of the plate, is the weightiest and most difficult matter in the whole treatment, and it cannot be reckoned upon with any regularity of success until after sufficient practice.

b. *Development of the final picture.*

The development of the exposure scale, which of course is only means to an end, does not depend upon absolute exclusion of light from the plate, it does not materially affect it even if a light is allowed to strike it for the purpose of judging as to the proper time of exposure. Any light upon the negative for the final picture must, however, under all circumstances be avoided. This is therefore best developed during two minutes whollw in darkness, in the manner above described, without inspection for the first minute, and even after that the inspection cut short as much as possible both by the front and at the back of the lamp, all which is easy of accomplishment, since the correct time of exposure has been ascertained from the scale, and success with the final plate is consequently assured. Hence in this case also a retarder need be used only when the greatest possible contrast is desired in the silver print. It should be determined beforehand if the negative is intended for multiplying by prints, since in that case it must be so managed as to come out weak and soft as possible; this is attained by first somewhat over exposing and them somewhat underdeveloping the plate. In this connection it should be mentioned that the work of making light prints is materially facilitated, and the appearance of the print not inconsiderably improved by substituting in place of the ordinary plates, the removal film dry plates specially manufactured for light prints. Unfortunatly, these are up to the present time not yet established as "orthochromatic;" the increasing demand for both orthochromatic and removable film plates, leaves no room for doubt, however, that within a short time even removable film orthochromatic plates will appear on the market.

Regarding the treatment of the removable plates for the light it is to be observed, that good results are only given by them when the image on the negatives intended for multiplying, are kept as soft as possible. While hard negatives, that is, those which produce, in the silver print, light and shade in glaring contrast, are in some circumstances effective in a marked degree, it is often astonishing what beautiful pictures are obtained by light prints by means of negatives from which the silver print is able to produce only faint, dim ones. Whoever, therefore, has a series of photographs to take for multiplication by light prints would do well to obtain beforehand more particular suggestion from the firm which he deems worthy of his confidence.

THE PRACTICAL APPLICATION OF PHOTOMICROGRAPHY.

In the foregoing explanations I have endeavored to state in the most concise form the general rules which bear upon the practical application for photomicrography, and it can but only furnish a foundation for special photomicrographic work. As he takes this in hand, new difficulties beset the path for the microscopist, which lie, not in the photomicrographic technique, but in the inherent peculiarity of the objects treated. To these difficulties is to be attributed the fact that photomicrography, (which we know was the real mother of photography, since the first photograph was taken by Davy by means of a solar microscope), has made such slow progress in its developement and practical application.

A treatise entering into all the questions involved in the practical working of photomicrography, would go beyond the narrow limits necessarily set to the present writing, I therefore limit myself to the consideration of the chief points merely, hoping to be able to communicate more complete information at some future time.

1. *Photographing fluid preparations.*

The adjustment of the photomicrographic apparatus, as described up to this point, presupposes that the objects to be treated are either themselves hard, or at least imbedded in a medium which prevents their moving, even in a vertical position of the object holders. Objects whose condition permits motion in an upright adjustment of the the holders, must of course be photographed in a horizontal position. This has been attempted in two different ways, namely:

1. By vertical adjustment of the microscope alone and reflection into the horizontal camera by means of a right angled prism. There are objections to this arrangement which make its advantages doubtful. On the one hand, the introduction of a reflection of the image between the microscope and the plate must be considered hazardous in the the highest degree on account of the doubtful deterioration of the image thereby, setting entirely aside the loss of light thus brought about; on the other hand, to cause movement in the object with each movement of the tube, each must greatly interfere with this work in an arrangement of this kind.

2. By setting the entire apparatus upright. This arrangement solves the problem in a more rational manner, but has the disadvantage that the far more convenient use of the camera in a horizontal position for firm objects, has to be given up.

The arrangement hit upon by myself and shown in Plate XIV, in which one part of the camera alone may be set upright and before the operation made to approach from above to the microscope placed upon a joint stool belonging to the apparatus, and with ease be again withdrawn, seems to me to quite fill the requirement, especially as in photographing fluid objects there are already other reasons why the attainment of high magnification does not enter into consideration.

2. *Deep photomicrographic pictures.*

In taking any photographs of a microscopic subject by the use of an ordinary photographic objective, the attention of every amateur has been drawn to a fault usually perceptible in the production of the picture with the full opening of the objective, and it consists in the fact that the image of the subject under treatment appears clear only in one plane, while all that lies in front of, or behind, this plane, appears more or less distinct. This defect in "deepness" of the picture is, as we know, remedied with the ordinary objective, at the expense of light strength, by the insertion of a diapragm, the diameter of which must be diminished in proportion to the depth of action required of the objective by the peculiarities of the subject. The microscopic image shows this defect in a higher degree, the larger the angle aperture of the objective used, and the larger the illuminating cone brought to bear. The microscopist is much less incommoded in his work because of this peculiarity, since he is enabled by use of the micrometer screw to study his object with ease in higher and lower planes than that of the first adjustment, and therefore has no great need to call into requisition the deep action of his instrument.

The photomicrographer alone up to the present time stands helpless in the face of the defect in depth of his image, and knows that in this lies the reason why his art stands in so many cases at the limit of its practical application. The reproduction at a single plane of a histological preparation, is very often entirely unintelligible, and is not more intelligible if the flus in depth of action is reached by means of diminishing the illuminating cone, while this diminution below a certain minimum, as before explained, injures the quality of the image. The movement of the micrometer screw during the exposure of the plate, which has been most singularly recommended for obtaining greater depth, by an Italian photomicrographer, is self-evidently entirely inapplicable, since the thing required is the attainment of pictures well defined even in the details. Thus there only remains to the photomicrographer an expedient when an intelligent understanding of a preparation is required to be obtained by depth, namely, to take several photographs of different planes side by side on one plate. This is easily done by using the sliding plate holder, which, as already described, comes especially for taking the exposure scale.

It is easy to understand that the study of such impressions of the preparation in different planes, placed side by side, is calculated to give more exact knowledge of structure, especially if to each of these is added a measure record of the distance between the corresponding planes, which is easily accomplished by means of the divisions on the socket of the micrometer screw. A very great advantage arises from the fact that each two of these series of pictures will be associated under the known conditions of stereoscopic relation, so that the desirable benefit will be obtained of stereoscopic sight in microscopic study, as recent experiments have proved to me.

III. PHOTOMICROGRAPHIC PICTURES BY POLARIZED AND BY SPECTROSCOPICALLY ANALYZED LIGHT.

For the former purpose the familiar polarizing apparatus is used, for the latter the spectroscope. Neither of these kinds of photomicrography has yet, to my knowledge, been seriously taken in hand by any one, although many cases occur to mind in which the photomicrographic use of the polarizing apparatus as well as of the spectroscope might be of undoubted value. For example only in this way is it possible to reproduce by photography the characteristic gradation of the colors which a microscopic crystal shows in polarized light, and that only indirectly, by gradation of light; only in this way can the sprectrum of a blood corpuscle, frequently of importance forensically, be microscopically established. For this reason, perhaps not only for the sake of completeness, but also on the ground of practical interest, was promised at least some intimation of the ways and means for applying both the kinds of apparatus mentioned, to photomicrography.

1. *Use of the polarizing apparatus.*

This is quite as in ordinary microscopy, the very large polarizer selected for this purpose being inserted below the condenser, the analyzer (Prazowski's prism) over the principal lens of the projection ocular; after which the illumination of the object and projection of the image is undertaken in the usual manner.

2. *Use of the spectroscope.*

The spectroscope to be made use of for photomicrography has to undergo one modification, that of exchanging both ocular lenses of the ordinary microspectroscope for those of a projection ocular 2. The microspectroscope so modified is introduced in place of the ordinary projection ocular after the image of the object whose spectrum is to be photographed, has first been projected by the latter. The prism of Amici belonging to the microspectroscope is now removed, and a sharp image of the slit is produced upon the plate; within this image appears the image of the object, equally sharp. This is so enclosed by narrowing and widening the slit, that it exactly fills the opening. Then Amici prism is placed in front of the lens of the projection ocular, which now receives light from that part of the preparation of which the spectrum is to be taken. This kind of work will be hardly different from that with direct sunlight.

KOCH'S POSTULATES.

In the case of micro-organisms of disease—

(*a.*) The micro-organism must be found in the blood, lymph, or tissues of the animal suffering from, or dead of, the disease.

(*b.*) The micro-organism must be isolated, and cultivated in suitable media, until pure cultivations result.

(*c.*) A pure cultivation thus obtained must, when introduced into a healthy animal, produce the disease in question.

(*d.*) The inoculated animal must yield the micro-organism again.

CONDUCTOR'S DEPARTMENT.

AN EVENT—DR. MILLER'S VISIT.

One of the events of the vacation season was the recent visit of Dr. W. D. Miller, following immediately his labors in the dental section of the I. M. C., at Berlin. An Ohio boy, relatives and places of interest in that State claimed his time and attention first; but later his professional friends and admirers took him in hand and did their best to do him well deserved honor. Cities and societies, through representative dentists, sought him out, begging for but a day; but the necessity for time to enjoy his well-earned rest and fulfill promises previously given most intimate friends, made it impossible for him to accept more than two or three of the many urgent requests for his company. Among these was the invitation of the Buffalo Dental Association to a banquet at the "Iroquois," Buffalo, on the evening of October 1st. About twenty-five members of the dental profession, and several medical gentlemen specially interested in bacteriological work, greeted the guest of the evening as the foremost man of the day on the scientific side of modern dentistry, and enjoyed to the full his story of practical work at Berlin in determining the nature of the agents most active in the production of tooth decay.

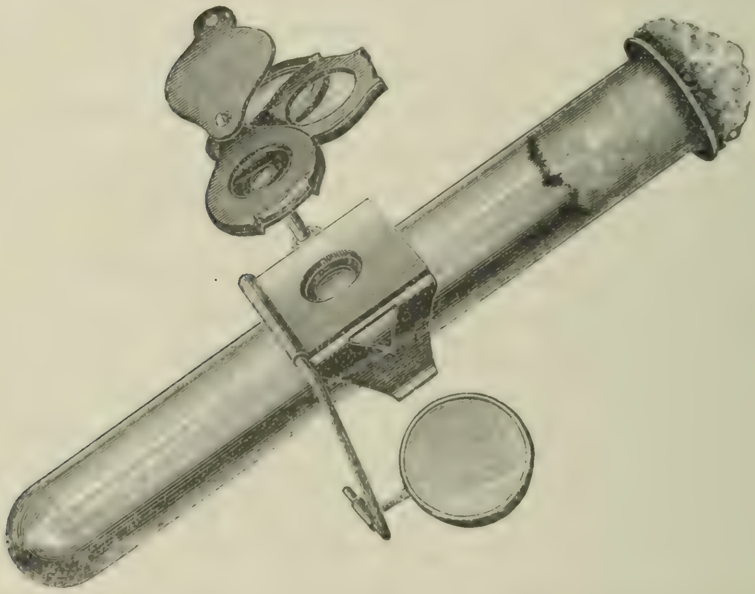
The day following was spent at Niagara Falls, a trip planned more especially for the benefit of Mrs. Miller, daughter of the late Dr. Abbott, of Berlin. It was during this visit, by the way, that Mrs. Miller saw for the first time her father's native land.

In the evening, Dr. Barrett tendered Dr. Miller a reception at his residence in Franklin street, inviting medical gentlemen, microscopists, pharmacists and dentists. The representation was by no means confined to Buffalo, but included the whole of Western New York. It was a representative body met to do honor to a more than representative man.

In addition to the social features of the evening, there was an exhibit in Dr. Barrett's laboratory of numerous specimens of carious teeth, also a magnificent section of a three month's implanted tooth, all brought by Dr. Miller from his work-room abroad. That they were admired goes without saying. Want of time, however, and the number who wanted to "just see," made their study by anyone of the company, even for a short time, out of the question.

To a majority of those present, the meeting with Dr. Miller was an event in dental history, and fortunate for all were the circumstances that Buffalo had been chosen by the distinguished guest as his "adopted city," and Dr. Barrett his champion and spokesman at home.

COLONY-COUNTER.



In making a comparative count of colonies of bacteria two things are desirable—an Esmarch tube and a colony counter. Glass plates and a linen prover have their use in this work, but for more accurate results better apparatus is called for. The Esmarch tube is simply a test tube coated with a solid nutrient medium, gelatine, agar-agar, etc., sterilized, and stopped with cotton. In making the test a series of tubes are taken, a given quantity of the liquids or solutions under examination put into each one, "swashed" about, and the surplus if in small amount retained, if large thrown out, or by means of gentle heat incorporated with the medium. At the end of a given number of hours an examination is made, the examinations continued at intervals, the results recorded, and if desired, a cultivation begun.

At this stage the counter comes into play. It is simply a small microscope adapted to tube examinations. A modification of a brass knife-clamp grasps the tube, holding it firmly to the under side of the stage, the opening in which contains a cover-glass divided into square millimetres. The optical part is an "Excelsior" triplet, the lenses of which may be used separately or in combination. The adjustment is frictional. The substage part has universal movement, and may be readily detached if window or lamp light is preferred direct.

UNION MEETING OF WESTERN NEW YORK SOCIETIES.

By resolution of the last Union Convention the Fifth, Sixth, Seventh and Eighth district societies will again meet at Rochester, in the auditorium of the New Osburn House, which will be the headquarters for the Convention.

The exhibits will be in the same hotel, in rooms adjoining the entrance to the auditorium.

The Convention will be called to order promptly at 2 P. M., Tuesday, October 28th.

Business meetings of the separate Societies will be held immediately on adjournment of the first session.

The entire forenoon of Wednesday, October 29th, will be devoted to clinics. It will be in charge of the Clinic Committee. Any one wishing to demonstrate the working of new appliances or special modes of operating are requested to apply to this Committee.

Any one having casts, specimens, anomalies or new appliances are requested to bring them for exhibition and report to the Exhibit Committee.

Dentists of any of the districts who wish to become members of the Society of their district should make application to its Board of Censors before the close of the first session.

Dr Wm. Carr, New York, Chairman of the State Law Committee, will be present and give a statement of the workings of the State Law. Dr. W. W. Walker, New York, President of the State Society, will also be present.

POST-GRADUATES.

The annual meeting of the Post-Graduate Dental Association of the United States was held at Chicago June 25, '90. The following gentlemen were elected officers: President, Dr. Geo. H. Cushing, Chicago, Ill.; Vice President, Dr. R. H. Cool, Oakland, Cal.; Sec'y and Treas'r, Dr. Lewis H. Tenney, 96 State St., Chicago, Ill.;

Executive Committee, Drs. R. B. Tuller, Chicago, Ill., J. H. Gallohugh, Chenoa, Ill., G. W. Milton, Silvertown, Colo.

This association is but a year old, but it starts out with good prospects of becoming a large and popular national organization, and has a grand work before it. Its object, aside from the same general one of most dental societies, is to particularly encourage post-graduate studies, and the establishment of facilities for the same in dental colleges. It also contemplates, when its membership will admit of it, establishing a systematic course of home study with benefits not unlike the Chautauqua Literary Society, perhaps, but the plan is not yet sufficiently developed to admit of outlining at this time.

While the name "Post Graduate" would imply an association of graduates only, the broad view is adopted of extending the work among all legal practitioners who may desire to join and co-operate, but practitioners not graduates are not eligible to membership until they have passed a post-graduate or practitioner's course in some reputable and recognized dental college.

Members of the profession who desire to become members of the Post Graduate Association should correspond with the Secretary, Dr. Lewis S. Tenney. The membership fee is $1. Annual dues, payable in advance, $1. Certificates of membership are issued when the member duly qualifies. Membership may be obtained through correspondence when evidence of eligibility is presented.

AMERICAN ACADEMY—23D ANNUAL.

The twenty-third Annual Meeting of the American Academy of Dental Science will be held in Boston, on Wednesday, November 12, 1890. The annual address will be delivered by W. W. H. Thackston, M. D., D. D. S., of Farmville, Virginia.

Edward N. Harris, D. D. S., Cor'g Secretary,
2 Park Square, Boston, Mass.

PELLETS.

State Society Proceedings.—The official proceedings are well under way, meanwhile read the July Odontographic.

At the August meeting of the American Dental Association Dr. Harlan was elected President.

Journalistic Change.—The *International* is now in the editorial charge of Prof. James Truman, of the University of Pennsylvania.

The American Society of Microscopists held its 13th annual meeting at Detroit, Mich., August 12th to 15th. Dr. Geo. E. Fell, of Buffalo, presided.

A new edition of *Carpenter on the Microscope*, edited by Dr. Dallinger, will be issued soon. It will be profusely illustrated, and bring microscopy up to date.

Don't fail to read our friend Catching's letter on another page. Talk about "poetic frenzy!" What is that to a dental meeting with "nightingales," and "watermelons," and—and "sich."

Wanted.—*Dental Times* for October, 1865, and July, 1872. *New England Dental Journal* for September and October, 1882, December, 1883, and November and December, 1884.

Dentistry after dark is allowable, but every dentist should be required to close his apartments at bed time. Howls of human distress in the later night hours are peculiarly horrifying.—*Louisville Courier-Journal.*

In a recent letter, Catching, of "Compendium" fame, calls us a "brick." Now, this must stop. We draw the line at bricks. But stay! Perhaps it wasn't "brick" that he called us. His penmanship is so much worse than ours that we may be doing him an injustice.

The Buffalo Society of Natural Science had its reception too, and the poet of the day wound up his stanzas thus :

> "Come friends, to our banquet, and heartily share it ;
> We'll make it a memorable festival scene ;
> And welcome, with toasts, the return of our Barrett,
> Director-in-chief of our famous cuisine."

At the Metropolatan Museum in Central Park, New York, in the case containing "money" of natives of New Ireland, New Britain, Gilbert's Group, etc., there is a toothless lower jaw the third molar alveoli of which indicate tri-rooted teeth, the secondary bifercation being in the posterior root of each tooth. Some enterprising fellow down there ought to get a photograph of it for his favorite journal.

Mother (to small son going to the country): Frank, have you taken everything you will need?

Frank: Yes'm.

Mother: Have you your tooth-brush?

Frank (very indignantly): Tooth-brush! Why, I thought I was going away for a vacation.—*Life.*

The mania for "painless" work has reached the shrewd element of dentistry, and they are plying their trade for all it is worth. Local anæsthetics are coming to the front daily, and the purchasers are sufficiently numerous to make some of the many "inventors" rich. Professional men have only to read and experiment with a few of the hundred or more cocaine formulas to obtain, at small expense, all that "painless" venders can supply at a profit of several thousand per cent.

In the absence of Dr. Stokes on "a well merited vacation," *The Microscope* was edited by "Teddy," and right well, too. He put on his war paint and hacked the "American idea" nuisance into chips. He didn't say so, but to all appearance had it in mind just the same, that notwithstanding the cheapness of the blooming pumpkin, America cannot be depended upon to supply the world with jokes, and at the same time burden them with detailed explanations. It's the rankest kind of stupidity that calls for the prodigious use of parentheses.

The following, from a patent pill circular, may be made to do noble service in dentistry. The childlike simplicity of the chemistry of the patent pill is equaled only by that of the amalgam filling:

"About all of the common physicing pills contain mercury or calomel; and coming in contact with the salt in our food, blue pill is changed into calomel (chloride mercury) by the addition of the chloride in chloride of sodium (salt); and calomel by this same process is changed into corrosive sublimate (bichloride of mercury), a dangerous poison if taken in any quantity, and particularly dangerous ultimately in small quantity, as it has in this way the worst effect upon the blood and is responsible for a large share of the cases of rheumatism, produced by taking cold with this powerful mercurial in the system. And this accounts for the many cases of rheumatism that will not get well under the usual treatment, as mercurial rheumatism requires special treatment, and if this fact is not learned and the patients properly treated they may never get well. If these common cathartic pills are taken at night they cause the bile to flow at a time nature never intended it to, and if taken repeatedly they establish this vicious and unnatural habit ; consequently the bile is not in the liver to flow when it ought to, after the meal, and help digest the food."

BOOKS, PAMPHLETS, ETC.

PRACTICAL, SANITARY AND ECONOMIC COOKING. By Mary Hinman Abel. American Public Health Association. Pp. XI, 190.

This is the essay that won the prize of $500, offered in '88 by Mr. Henry Lomb, for the best paper on the above subject, the specific title of the paper in question being, "The Five Food Principles, illustrated by Practical Recipes." It seems to cover the subject completely, and at the same time make it easily understood by those for whom it was specially prepared. How to get the most from what are classed as the necessaries of life is becoming more and more of a problem daily, and its solution correspondingly urgent. The Association issues the book at about the cost of printing, thus putting it within the reach of all. The Secretary, Mr. Irving A. Watson, may be addressed at Concord, N. H.

RECOLLECTIONS OF GENERAL GRANT. By Geo. W. Childs.

A little sketch of some features of the great general's life not usually found in larger and more pretentious works. Brief, but interesting.

CATCHING'S COMPENDIUM.

The time for issue of this valuable work is at hand, and as it goes to subscribers only, we urge every one desiring a copy to send his name at once to Dr. B. H. Catching, Atlanta, Ga. It should have a place in every busy dentist's office.

A SYSTEM OF ORAL SURGERY : Being a Treatise on the Diseases and Surgery of the Mouth, Face, Teeth, and Associate Parts. By James E. Garretson, A. M., M. D., D. D. S., etc. Illustrated with numerous wood cuts and steel plates. Fifth edition, thoroughly revised, with additions. Philadelphia ; J. P. Lippincott Company. Pp. XLIV—1364.

In preparing the present edition of this well-known work the distinguished author has completely reviewed again the field of operation, and recorded his observations and declarations in a manner by no means common with those who essay to instruct. While, as a matter of course, the work has grown to greater than former proportions, the author's method of handling the new material that made the present edition necessary, has enabled him to keep within the limits imposed by comprehensive and practical presentation. The additions consist not only of text, but illustrations, many of which are new and appear for the first time. New chapters entire appear, and alterations and interpolations abound.

As stated by the author, and as all know, twenty years ago oral surgery was without even a name. "To-day oral surgery, as a specialty of medicine, is not surpassed, as to its range and as to requirements looked for on the part of its practitioners, by any department of the healing art."

As to the position of dentistry in relation to oral surgery, and the latter in its relation to general medicine, the author is not likely to be misunderstood. He says: "As exponded in the present work, and as the specialty might not otherwise have existed, oral surgery includes dentistry; it includes it in a purely surgical sense, thus assuming dentistry to be, not a profession in itself, but part of medicine at large; such assumption being founded on an experience which clearly enough exhibits that where medical knowledge is lacking dentistry is of very little use to a community."

The Lippincott Company has done its work in a manner that challenges admiration, leaving nothing to be desired in the make-up of a book, unless perhaps the publishing of it in two volumes.

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THE

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PRESIDENT'S ADDRESS.

BY R. H. HOFHEINZ, D D. S., ROCHESTER, N. Y.

[Delivered at the Fifth Union Meeting of the Fifth, Sixth, Seventh and Eighth District Societies, held at Rochester, October 28, 29 and 30, 1890.]

Members of the Fifth, Sixth, Seventh and Eighth District Dental Societies of the State of New York ; Professional Brethren :—

It affords me great pleasure to welcome you to this, our joint meeting. These annual gatherings have gained both in scientific attainment and popular feeling ; they contribute largely to the increase of our knowledge. The meeting of a body of scientific men means an interchange of ideas ; it means absorbtion of these ideas ; it means their assimilation, and, in the final result, it means new products. Our dental societies and their meetings are among the principal factors of our superior standing as dentists to-day. The days are past when the dental practitioner carefully excluded his own individual mode of operating and laboratory work ; our noble profession has become cosmopolitan, and the knowledge of one has become the property of all. And what has brought on these extraordinary and highly beneficial changes? The founding of City societies, District societies and State societies, and their respective labors, above all other things. Nothing is so fatal to the developement of a profession and progress in general as the seclusion and isolation of its members ; nothing so fatal as the want of communication. Not the least do we owe our unique and superior position as American dentists to our dental societies, and much does the public owe them for the better class of professional men they take into their ranks and educate, in contradistinction to the large number of charlatans. Though we are in possession of dental colleges, which demand a better standard of education; though the law of our State is now protecting us against the polypes of our profession; we are far from having reached the ideal of professional standing, and far from the summit of our achievements.

Why do we discard our customary employments and assemble here from long distances? We are not an assemblage of politicians who come here to make arrangements for the next campaign; we are not a body of men who come here to contrive schemes by which we can increase our fees and make our profession more lucrative; nor would the mere intellectual pleasure in listening to such essays as will be presented to us be sufficient attraction; still less is it the material inducement of the banquet that brings you here to-day.

It is gratifying to feel that no selfish motives cause our assembling. The cause is a loftier one, though we must not underestimate the actual aggrandizement of our intellectual possessions which these meetings secure us. Every one who comes to our meetings is animated by the laudable desire to assist in raising the standard of our noble profession, and to add his share, be it never so humble, in erecting this world-famed monument--American Dentistry.

In a recent article on the Dental Laws of Italy, written for the *Dental Cosmos*, the writer finishes by saying: "Look to your laurels, gentlemen of our profession in America." And right he is when he tells us to look to our laurels. It is but relatively short time since American dentistry was recognized all over the civilized world, not only as the first in rank, but as the only true representation of our profession. The distance between the American dentist and that of other nations has become less and less. The efforts of the European dentist have brought him close to his American superior, and, gentlemen, we will have to fight hard for our laurels in this arena of professional combat Every country abroad is asking for a more thorough education and technical equipment of its dentists, many of them allowing "M. D." only to practice.

It is high time for our colleges to take note thereof or it may not be long ere we look in vain for the laurels of our profession. It is the higher standard of education in general of its members that will raise the standard of a profession individually. As dental societies we have done a large share in this educational strife. Gentlemen, we must endeavor to do more and more in this direction. It is for that reason above all that I welcome you here to our city. I look to these meetings as great and powerful animators and stimulators, not only for the individual but for the general good of dentistry. I look to these gatherings as one of the prime creators of that feeling of professional brotherhood, without which professional life loses its principal adornment. I welcome you as brethren who come here to perpetuate good fellowship! I welcome you as educators! You come to express your ideas; the thoughts of one enrich the knowledge of the other by interchange. I welcome you as ardent, zealous workers on this grand structure—American dentistry. When the history of it is written let it be known that our union meetings have largely and nobly contributed their share, and always will do so as long as the edifice is not entirely completed. When the history of it is written let it be known that our union meetings have not been held in vain. Let it be known that our intellectual labors stand out in as bold relief as those of any other society. Let it be known that its members assisted in the noble effort of raising American dentistry on the pedestal of its highest perfection.

THE COUNTRY DENTIST, AND WHAT IS EXPECTED OF HIM.

BY J. W. COWAN, D. D. S., GENESEO, N. Y.

[Read before the Union Meeting, Rochester, N. Y., Oct., 1890.]

A young man who graduates from a dental college nowadays usually has aspirations for a city practice, and rather looks down on his fellow student who is content to go to a small country town or village to make a "living." It has always seemed to me that if more of our graduates made the said "living" for ten consecutive years after graduation, more of them would remain in dental practice. It is a mistake to suppose that there is less money or prospect of fame for a beginner in the country; for if a young man has ability the country public will find it out quick enough, and if he has not the ability that also will be discovered; and he can take down his shingle and go into other business—the quicker the better for himself and all concerned. Allow me to say right here that the public in a great measure judges of a man's ability as a dentist by the altitude of his charges, be it in the country or city.

There is scarcely an exception where competent young men have commenced in the country, attended to business and kept up with the times, but have their balance on the right side of the page, and occupy good positions in society. There is a feeling among many that the country dental office is conducted on much the same principle as a barber shop, and to illustrate I will give you a little incident which occurred a short time ago. A city gentleman, whom you all know, came to see me one day, and while in my office picked up one of my appointment cards, and, after reading it, said in a very suprised tone : "Why, can you charge for lost time out here in the country ? I didn't suppose you could work to appointments at all." I asked him if he didn't think it a good plan to have "Next" in big gilt letters pasted on my office door.

Our patients in the country, when they consult a dentist, expect to have to make an appointment and keep it, just the same as in any well-regulated city office. I cannot see how a successful practice could be carried on in any other way. We have many good operators located in small towns, and they mostly have good practices, but very few are members of dental societies, although they all read the transactions as they come out in the journals. One reason why they don't join the societies is because their neighbor is a member, and they can't get over that feeling of silly and unprofessional jealousy which exists to such an extent among dentists. They see as a rule only the poorest work of their contemporaries, or at least that with which the patients have been dissatisfied, and remember only the best of their own, and make their contrasts accordingly ; and those comparisons are the chief cause of this jealousy and bad feeling generally. When asked what kind of a dentist Dr. So and So, my neighbor, is, I consider that I am paying him a compliment when I reply: "I really cannot say, for I've seen very little of his work. I know he has a full practice ; his patients have all seemed satisfied and have not found it necessary to consult me."

It is a pity so few of our country practitioners see fit to give credit where credit is due, in dentistry, as in anything else. What a good and beautiful thing it is for brethren to dwell together in unity. There is plenty of room in the country for young dentists, but let no one think for a moment that an incompetent man will succeed there any better than in the city. He must be capable. He must be able to meet the verdant and oftentimes melodious young farmer and shrewd old agriculturist, for whom, thank heaven, he is seldom required to do more than pull a tooth, in the same suave manner with which he conducts his fairest patient to the modern inquisitorial rack. If he is a bridgeworker he will require the cunning of a serpent and the appearance of dove-like innocence, when interviewed by our old friend of the International Tooth Crown company, if he hopes to escape from the toils without being a member of the Dental Protective Association of the United States, and to which association I can from personal experience most heartily commend all my fellow practitioners, and more especially those in the country.

He will be expected to subscribe to every project on foot in the town where he practices, be it a grand celebration, a church fair or the relief of a poor man who perhaps has lost his last horse from the ravages of old age or the heaves, and to our credit be it said, dentists do not give grudgingly. He has frequently in connection with his practice the agency for pianos, bicycles, and perhaps insurance, but it has always seemed to me that if one had the time to spare from his practice to attend to such affairs it might be much more profitably employed in practical research and experiment, for in this age any one can be an investigator if he has but the time.

He may be interested in politics, but he had better keep out of them. If the necessity requires and the occasion demands it, he may view certain vices from the same standpoint as his prohibitionist patrons, but at the same time he is generally expected to be "one of the boys."

"FIFTY YEARS AGO."

BY L. S. STRAW, M. D. S., NEWBURGH, N. Y.

The response to this toast at the recent Union meeting banquet at Rochester, is so characteristic of "Old Neptune" that we give it entire. When Dr. Straw waxes he does it eloquently, with the result that his boys all insist upon jumping the table if only long enough to shout "Hooray!"

The sentiment is so pregnant of progress and marked educational events, so full of rounded periods, that the passer-by would have to stop, read and reflect in order to take it in. What a grand toast for some one able to rise and respond! What an essay could be written, and in length far beyond the limits of an after-dinner talk!

There are probably but few of us here to-night who have bicycled along the whole route, and carefully observed the shifting panorama from then to now; and we stand all but speechless as we listen to the onward march of officers and soldiers vieing with each other in their effort to do for humanity, their profession and themselves. Would that I could rehearse to you the glories of the many who have devoted their time and talents to the advancement of our chosen profession; whose names are emblazoned upon the tablets of our memories, there forever to remain.

Some one who is a Censor indeed, must have suspected, from our declining lineaments, and the gray hairs that adorn our face and head, that a half century dates a beginning to some of us, and perhaps it may be as well to own up and say, that in 1840 I was first called upon by my father to cast plaster, and make dies, and add that ever since I have been dying to rise above the necessity for such unmonetary occupation.

I wish I could portray to my younger friends the utter impossibility of laying the foundation of a Christian life fifty years ago, while earning a living by carving, enameling and baking porcelain teeth for each individual patient, and at the same time relying upon the uncertain results to be obtained from the mingling of quartz and feldspar, picked up in those primitive days in fields and from quarries which plainly showed a glacial and an upheaval period, and which upheaved many a silent mono- or duo-sylabic ejaculation from hearts which did not beat in unison with rocks and mortar pestle pounders—hearts too young to receive and assimilate sparks of enthusiasm from such flinty occupation.

Oh, that I could stand here to-night in the epaulets of a general, and marshall before you the small beginnings and the great endings of the last fifty years, which relate to us as a profession! The beginnings were in the hands of those who had secrets, which were padlocked that the ambitious cobblers could not turn their awls into the all of dentistry; that blacksmiths could not forge themselves into dentists, since dentists had presumed to intelligence beyond the test of bellows, fire and steel.

In those days there was of necessity a great lack of true appreciativeness on the part of the uneducated, and even the generally well informed public, and my father found full occupation only in visiting neighboring towns and villages periodically; and I myself commenced a non-ethical career by posting hand-bills upon fences and in stairways, proclaiming to the benighted denizens the good and new things in waiting for them if they would give me a call, promising to remain two weeks and return if needed.

Now, after a sojourn of thirty-three years in one village, called "city" for short, I found it difficult to come to meet with friends at this banquet table to-night because more needed at home. What a change has come over the spirit of our dreams, and what little needful change has come to us!

I could not forgive myself did I not allude to the great benefit which the dental profession has derived from associative effort. Thirty-five years ago I felt a conviction that much good might result from the formation of dental societies, and at that time I traveled from Bangor to Augusta, to interview a good man in regard to the idea of a State association of dentists in Maine; but the time had not arrived, and I returned home to bide the coming of the morn. It now seems as though the full time had come, that the noon-day sun was shining down upon us, and that we were basking here in the resplendent rays of four societies made glorious by one brotherly kinship.

And now I want to say to the young men present, and their prospective descendants, that when a semi-centennial arrives to them, I trust they will have pounded the life out of these everlasting microbes of civilization, and drawn the lines so tight as to choke out the prevailing entity of Neurasthenia, and brought living nerves back to a living standard; and then will many of us who have gone before just kindly look down from the clouds, and pronounce that glorious benediction—"Tim. X, 16."

MEDDLESOME DENTISTRY.

BY A. FRAID, D. D. S., SPOOKVILLE, N. Y.

[Read before the ROCHESTER DENTAL SOCIETY, October, 1890.]

"Meddlesome dentistry" is not practiced as a profession, nevertheless it enters more largely into daily practice, even that of professional men, than would on first sight appear. It is not, of course, that anyone wishes to "meddle;" but the circumstances of the day may urge him to do, unconsciously, perhaps, that which later, more deliberate, and therefore better, judgment would unhesitatingly condemn. For instance, in the hurry of a busy day a case of irregularity presents. A glance suggests extraction, and the tooth is removed. A year or two later the dentist discovers the blunder—finds that he had "meddled;" in other words, extracted a tooth that had better been let alone. Or, on a dull day, and in the case of a comparatively feelingless lad, he discovers an exposed pulp, whereupon he twists it out and indulges in immediate root filling. As the months go and come the lad's tooth grows darker and more conspicuous, until its appearance becomes such as to invite a crown. The destruction of the pulp of the tooth in question may have been a foregone conclusion, but the time for the operation had not arrived by perhaps many months. Capping meant but the beginning of an operation; the broach its completion. The latter meant immediate compensation on a dull day; the former nothing, unless additional time to read the daily paper. The extraction was the outcome of hurry ; the too early destruction of a young pulp the result of the want of something else and better to do. Both operations, it may be assumed, were honest and full of good intent from the point of view of that particular day ; but the circumstances of the day were such that the operator "meddled," as he may have learned later, perhaps to his sorrow, and perhaps, too, to the knowledge of other people. This is the notion, none too clearly stated, perhaps, but which the following remarks may possibly make more intelligible.

And first of so-called cervical cavities, such as are found at the juncture of crown and root in canine, incisor and bicuspid teeth, but particularly the first mentioned. And by "cavities" we mean those formed by decay as distinguished from those ascribed to erosion—whatever that may be. Now, it is a rule in dental practice that every cavity should be filled. Gold, amalgam, tin, cement, gutta percha may be the material ; but the cavity must be obliterated, and the sooner the better. But all rules have their list of exceptions ; so this. Experience teaches every man that some of these cavities are self-limiting, therefore should not be touched until the operator finds marked evidences of cessation of the spread of the affection. A brownish spot sometimes shows itself at the gum margin, and in the facial aspect of a canine. The rule says the destructive process should be stopped, that the softened and discolored tissue shou'd be removed, and its place occupied by filling material of suitable kind. This is done, say prematurely, and with what result ? In a few months a little brownish speck appears on each side of this perfectly inserted gold filling. With a small bur these are removed and gold made to take their place, or the original filling is removed and a larger one substituted, in either case at the expense of more or less good tissue. A few months more and we have the same thing over. As already intimated, there is a limit imposed by nature on the extention of these crescent-shaped cavities, both as to depth and their spread laterally. Their final depth, if left to Nature, is hardly more than sufficient to anchor the filling, while their spread laterally ceases at what in the majority of teeth is the most vulnerable of places, the cervico-proximal. But it so happens that many of these present the brownish spot, and which, by the way, is always softer than the surrounding tissue, without even the tendency to spread until later in the tooth's history, or when subjected to the operation just mentioned, which merely aids the destructive process. Should anything be done in these cases ? What ? When should it be done ? How may we distinguish the stationary from the progressive form without the making of a record? These and other questions are not for the reader to answer, and for obvious reasons.

Again, we find teeth in which proximal cavities are few and far between, but in which fissures abound. These fissures show no softening, do not admit even a hair broach, but they are fissures; and are not fissures the place of beginning of decay in molars and bicuspids? The fact is lost sight of in following what in general is a good rule, namely, to fill all cavities, that the apposition of enamel is well nigh perfect, and many of the fissures all but filled with cement; and the further fact that we see molars and bicuspids thirty, forty, fifty years in service, with fissures that were fillable in youth, but now all but ground out in mastication, even to the exposure of good dentine. We have one such tooth in our cabinet—a sixth-year molar—that served its owner eighty-three years, and a fissure still in sight. When to fill and when to let alone comes in here too for answer. Difference of opinion among dentists as to what constitutes a cavity will lead one man to say that a given tooth does not need filling because it is not decayed, and another that it does because it is fissured—fissures are cavities, and cavities should be filled.

Teeth in contact are usually discolored at the place of contact, such discoloration becoming inky black in long standing cases of good teeth. These places of discoloration are called by some "pigment spots," while in the nomenclature of others they are evidences of "eburnification." Superficially the enamel is of flinty hardness, and in some instances turns the edge of the best of steel. In the proper light it glistens like jet and shows a flattened surface, or facet, suggesting wear by the adjoining tooth, or mere change of shape by mutual compression? Such a tooth seen in section shows the interior the opposite in color, consistency and structure of that just described. It is white, soft and granular. And yet these surfaces in teeth of good structure stand indefinitely, often outlasting the grip of the tooth on its place in the jaw. But dentists often pick and pick at these spots until there results a cave-in, then a filling, more decay, more filling, until the last stage of that particular tooth is the forceps. The continuity of the enamel has been broken, a cavity formed, where but for meddlesomeness on the part of the dentist the tooth might have persisted to the end of a respectable dental career. When to open these places, when to let them alone, calls for the exercise of no little judgment on the part of the operator, involving, as they sometimes do, the destruction of that part of the tooth between the spot in question and the grinding surface—a serious loss of tooth tissue.

When we consider the tooth-pulp, the difficulties presented are none the more easily disposed of. With some the rule is, cap everything not diseased ; with others, destroy everything exposed, whether diseased or in the full enjoyment of health. That dentistry should be characterized as meddlesome that would destroy the juvenile pulp simply because it happened to be exposed, and for the reason that without it the permanent tooth cannot be built up to its natural proportions, structure and strength, nor the temporary tooth properly disposed of to make way for its successor. In the latter case the pulp should be retained intact and in health for its destructive or tearing-down functions ; in the former for constructive, building-up and maintaining functions. A gold filling or a crown on the root of a tooth fractured in a fall, or otherwise, may be more sightly than the remains of a broken tooth ; but the careful nursing for a time of the pulp contents of that tooth will give better results and for a longer period than could possibly result from other treatment.

It is possible, too, to meddle with teeth without pulps. Every one here has opened into teeth that were off-color, and therefore assumed to dead. Observation and experience justify the operation as a rule. But the rule says pulpless teeth should be treated, that is, disinfected and filled. A boy falls and not merely loosens but knocks out a superior central incisor, takes it to his dentist ; it is replaced, ligated and otherwise made firm. The tooth grows to place apparently by first intention, all uneasiness subsides, and most remarkable of all, does not change color, defying in this respect all expert ability to distinguish it from its neighbors. Reasoning confirmed by the never-failing electric lamp says the pulp is dead ; the rule says the pulp chamber should be opened and the root filled. But to do so in this particular case would be to "meddle," therefore the order should be "hands off."

Meddlesomeness is as apt to show itself in the extraction of roots as elsewhere, the rule being, extract everything not directly concerned in the appearance of the patient or useful in mastication. Roots are an eyesore, they at times cause more or less pain, they gather and hold food and secretions, wasting themselves and inducing decay in adjoining teeth. But to remove a root that by treatment may be made useful robs the patient of the possibility of a crown. Circumstances may be against crowning at the time, the patient's exchequer for instance ; but that root should be extracted, if at all, for a better reason than that it is a root. Perhaps the patient has several roots, the retention of which is essential to the contour of the face, which is often the case with the canines—teeth that dentistry without purely surgical procedure cannot replace. Cases of retention of roots over which plates have been made, often show the wisdom of operator or patient or both, in securing, from an esthetic standpoint at least, a natural state of affairs. Plates over roots are not popular with dentists, and should never be favored except in the most favorable of cases, and especially those in which cleanliness is one of the cardinal virtues.

Again, it is meddlesome to extract a root merely because it is a root, when as we often see, as in the bicuspid roots, it holds adjoining teeth upright, keeping them sightly and maintaining the natural occlusion with teeth in the opposite jaw. The extraction of such roots means, too, recession of gum on adjoining teeth, with the usual accompaniment of chronic sensitiveness and soreness, and in many cases loss of the teeth.

Another and exceedingly rare case of meddlesomness occured some years ago in our own practice in two cases that fall under the head of metastasis. We had extracted abscessed tooth after tooth at intervals of months for a lady of scrofulous make-up ; sometimes a decayed one, sometimes a sound one, until her removal from the city freed us of further responsibility. In the second case, we did the same with the superior canines, one after the other, and in each case sound but abscessed, and later with the lower incisors and canines, the latter as sound as ever but abscessed like their predecessors. Here too scrofula was suspected, but to the reader not proven. The trouble in the first case culminated in so-called "milk-leg," and the second case has not seen a well day since the single operation that relieved her of her last and troublesome tooth, the extraction of which may have robbed her system of its means of drainage.

Finally, it is common practice to meddle with "green-stain," especially in the case of children, in whom it is sometimes developed to the degree of blackness. Its removal is commonly effected by mechanical means, pumice and other powders on buffs. But should this be done ? This stain is not *on* the teeth, but *in* them, and if in them, its removal is effected by the removal of that part of the tooth lodging the stain. The stain alone does not go ; the tooth goes and takes the stain with it. True, we see little pits in these places when deeply stained ; but the stain is as innocent of their cause as if it had never appeared. It is suggestive of cause and conditions, but further than that serves no other purpose than to mark the place of possible destruction of the tooth, and at the same time offend the eye. Other than mechanical means should be resorted to to rid the teeth of this offense, and yet such means are in daily use by every one of us, the absence of something better being our excuse. It is meddlesome just the same to apply grit to these surface-stained teeth.

Now, in reciting these cases in which meddlesomeness is practiced, and the list might be drawn out indefinitely, we are neither censuring nor criticising any man nor any set of men, for the reader is with you, has been from the first, and may be to the end. Some things that we see, every one of us, in daily practice lead to the notion that meddlesome dentistry is developed in some quarters to the degree of a fine art. It is possible to put a limitation upon this, and our obligation to patients, the profession and ourselves should at least stimulate to the attempt.

PATENT DECLARED INVALID—"INVENTOR FAILED IN DILIGENCE."

The following from the *Scientific American* may interest inventors and purchasers of inventions, also many of those who have read Dr. J. Morgan Howe's paper in the *International Dental Journal* for November. "Pigeon-holing," an invention does not necessarily secure it to the owner—he must reduce it to practice or meet the harge and risk the consequences of having "failed in diligence:"—

Letters patent No. 363,936, granted to Charles A. Wright, for improvement in card-gilding machines, declared invalid, said Wright being held not to be the first inventor.

Where, in a suit for infringement, it appeared that the application on which the patent in suit was granted was filed January, 1887, and that some months previous thereto the defendant had devised and constructed the machine complained of as an infringement, and that in the winter of 1883–84 the plaintiff had described it to his solicitor, and that in 1886 he repeated the description more fully, and that he did not intend at either date to reduce the invention to practice, his only concern being to protect himself in the construction and sale of the machine made under an earlier patent, and did not ever intend to apply for a patent at all unless it should seem necessary as a means for preventing others from making these machines, and that at the time of applying for patent he had not embodied his invention in a machine for practical use, and it further appeared that at the time of his first conversation with the solicitor he was as well prepared to reduce his invention to practice and apply for a patent as he was at the date of the second, and that any competent mechanic accus omed to such work could have constructed the machine from the first description almost, if not quite, as readily as from the second; *held* that the plaintiff has failed in diligence.

It is the duty of inventors to use reasonable diligence in reducing their conceptions to practice and applying for patents when desired, and they cannot neglect it without danger to their rights.

The claims of letters patent No. 290,303, granted to Charles A. Wright, for machine for gilding cards, strictly construed, in view of the state of the art, and confined to the particular character of machine described and manufactured under it, and when thus construed the defendant declared not to infringe.

EDUCATION OF THE PUBLIC.

The propriety and desirability of educating the public with reference to personal, house, neighborhood, city, state, and national sanitation has come to be recognized as essential to the national health. The medical profession has earnestly sought to convince the public of the value of obedience to hygienic laws, and to secure to the public at large the benefit of sanitary science. To some small extent these efforts have been appreciated, as the evidence has been presented of the arrest of epidemics and the prevention of the spread of infectious diseases. But the vast importance of the subject is not yet adequately comprehended by the general public. Sanitation, hygiene, prophylaxis, the laws of health, have been the texts of innumerable essays for the benefit of community. Treatises without number have been written and published on the hygiene of the various organs of the body; on the hygiene of age and occupation; on the hygiene of the dwelling, the school, the factory; on dress, diet, sleep, rest, work and overwork; on ventilation, drainage, disinfection, adulteration of food and water supplies; on the care of the sick and aid in emergencies; on the summer and its diseases, the winter and its dangers, preventable diseases, the art of nursing, etc., —all intended and calculated to diffuse as widely as possible a knowledge of the elementary facts of preventive medicine and the bearings and applications of researches in every branch of medical and hygienic science. Notwithstanding these labored and persistent efforts, it is marvelous what little interest comparatively is evinced by the public in whose behalf they are put forth. Even among the well to do classes, those of more than an average general intelligence, how little is known concerning the physiology of the human body, the location and function of important organs, the circulation of the blood, respiration, digestion, assimlation, etc.!

What wonder, then, that there is so little known of the mouth and the teeth,—their development, anatomy, periods and order of eruption, the relation of the sixth-year molars to the decidous and permanent dentures, the shedding of the temporary and eruption of the permanent teeth, the nutrition of the teeth, their nervous, regional, and systematic relations, the care of the teeth, and the hygiene of the mouth!

There can be no question as to the importance of a wide diffusion of information in regard to these matters, and of an effort to awaken a general interest in the prevention and arrest of decay and loss of the teeth.

If, as it has been said, the real groundwork of national health is the education of the masses, so an intelligent comprehension ot the varied functions of the mouth and teeth, a better appreciation of the causes of deterioration and of the the means by which it may be counteracted, is essential to the groundwork of a much needed improvement in the dentures of mankind. Dental colleges may multiply and each recuring year send out their hosts of graduates, legislatures may pass laws regulating the practice of dentistry, and thousands of operators may be kept busy in the work ot repair, and still the deterioration will go on, and still a vast amount of preventable disease will make its ravages.

The remedy is the education of the people. They must be made to realize the priceless value of their dental organs; fathers, mothers, and children must be made to understand that neglect that involves the loss of teeth is suicidal. How to disseminate such knowledge is a problem which may well engage the attention of dental organizations.—EDITORIAL, *Dental Cosmos.*

MICROSCOPICAL APPEARANCES IN CARIES.

In Enamel.—The enamel loses its transparency and the prisms are seen to be separated from one another; the elements of the fungus are seen in the spaces formed by this disintegration, as there are no channels in its substance along which they can penetrate, its structure, in fact does not admit of the proliferation of micro-organisms in the tissue. A dark coloration of the enamel is generally to be noticed.

Dr. Abbot, in a paper published in the *Dental Cosmos*, in 1879, in describing the decalcified portion of carious enamel, speaks of the readily stained masses of softened substance as protoplasmic bodies "embryonic corpuscles," which the change in the enamel, caused by caries, has brought into view. He considers this, as also a similar appearance in carious dentine, to be evidence of a high vitality in the tissues.

Other observers consider that there are irregular masses of germs mixed with the detritus of the decayed tooth, that not being homogeneous they take up the coloring matter unequally at different parts and produce a false appearance of cells (Miller).

Caries in Cement.—When caries extends to the cementum, the organisms are found in the lacunæ and extending along the canaliculi.

According to the observations of Dr. Miller, the Sharpey's fibres in the cement become infiltrated with germs and dilated and the tissue lying between them dissolved.

Caries in Dentine.—The structure of dentine is eminently suitable for the proliferation of micro-organisms, and it is in this tissue, accordingly, that their effects can be best studied. If we examine with a low power a longtidunal section of carious dentine in a tooth, in which the decay has commenced from a fissure in the crown, and which has been treated with fuchsine or gentian violet, it is noticeable at once that the stained portion has more or less the appearance of a cone, the most deeply stained part forming the base of the cone, corresponding to that portion of the dentine which formed the floor of the cavity of decay, and that the apex of the cone is directed towards the pulp cavity of the tooth.

On examination with a higher power, it is seen that the micro-organisms, usually either micrococci or rod-shaped bacteria, penetrate freely along the tubes of the dentine, in the more superficial portions being crowded together, and in the deeper layer of the tissue filling the tubes less completely, in some cases being reduced to a single line. The base of the cone is seen to be formed by the extension of the micro-organisms in a lateral direction along the fine terminal branches of the tubuli. The tubes are seen to be expanded at intervals into irregular globular or oval-shaped spaces fllled with micro-organisms; in many cases large cavaties appearing where these have become confluent. These cavaties breaking into one another, the whole tissue of the dentine becomes broken down and gradually destroyed. We frequently see groups of canals filled with organisms lying in the spaces of the dentine apparently free from infection, in other cases, the matrix seems to have disappeared and the whole of the dentine in the part examined is found to be a mass of micro-organisms. Leptothrix threads are especially noticeable on the margins of the preparations, where their invasion of the decalcified tissue is marked by bundles of threads for some distance into the dentine.

Specimens are met with where the leptothrix threads penetrate the tubes to a considerable depth, some specimens showing leptothrix threads throughout, to the exclusion of other forms. Mixed with the leptothrix filaments are often seen small round points which may easily be mistaken for micrococci ; these are cross sections of the leptothrix threads and may be seen by altering the focus of the objective. Cocci and short rod-shaped bacteria are, however, the forms of micro-organisms usually found in the deeper layers of the dentine. In many specimens some tubes are found filled with micrococci, others in their neighborhood filled with bacilli, and according to the observations of Dr. Miller, single tubes are found in which both micrococci and rod-shaped bacteria are seen. Inter-globular spaces, so often found in teeth immediately beneath the enamel, play an important part in caries by increasing the porosity of the dentine and leading to its rapid disintegration in a lateral direction ; being one reason of the undermining of the enamel so common in caries commencing at the masticating surface.

Dr. Miller describes germs as penetrating into the inter-globular spaces, but in many specimens I have examined, showing these spaces, I have never seen them occupied by stained micro-organisms, those contained in the tubes seeming to be arrested at the inter-globular spaces, and it does not appear as if they proliferated within them. Some specimens show a curious traverse splitting of the matrix at right angles to the tubes, oval spaces being formed having a very characteristic appearance.

Mr. C. Pound, of the Bacteriological Labaoratory at King's College, London, who has cut and examined a great number of specimens of carious dentine, says he has always found these oval spaces in teeth with dead pulps, and recognizes a dead tooth by this particular appearance. I do not know how far this observation has been corroborated by other observers.

According to Dr. Miller there is always present in carious dentine a zone of softened tissue in advance of the line of micro-organisms, separating the healthy from the infected tissue, this zone not corresponding in outline with that of the area infected. Messrs. Underwood and Milles, however, failed to detect any softening in tissue not attacked by micro-organisms, any tissue that was penetrated in the least degree by a sharp point, exhibiting these organisms under the microscope. They also inoculated nutrient gelatine with portions of the dentine taken from the extreme limits of the softened part, and found that an abundant growth of micro-organisms took place.

They therefore came to the conclusion that although, as these organisms secreted an acid capable of softening dentine, one would *à priori* expect to find a softened zone, it was very difficult to demonstrate, and if present, it existed to a microscopical extent only. In his latest work, Dr. Miller mentions as evidence of the existence of this zone, the fact that longtidunal sections of carious dentine stained with fuchsine, show large unstained portions of the tissue at the sides of the preparation. These specimens are evidently softened sufficiently to cut, although they contain no germs. The germs spread more quickly in the direction of the canals than sideways, as in this direction they can only make way through the narrow transverse branches of the tubuli, but the decalcifying acids can infiltrate the tissue in this direction with ease.

The same observer states that germs are able to penetrate into the tubuli of the normal tooth. The diameter of a tubule being larger than that of a micrococcus, there is no mechanical impediment to the penetration of germs, and with a high magnifying power a small number are sometimes seen, an advance guard, so to speak, which have penetrated into the normal tooth structure, without causing any changes in it. In absorbing milk-teeth germs are frequently seen to have penetrated into the open tubes for a short distance (Miller).

An appearance is often met with in longtidunal sections of carious teeth, the cause of which is not understood with any certainty. Short disconnected rods are seen, some lying scattered about in all directions, and others still within the tubes, lying at different angles to one another, like a pile of bricks in the act of falling. It is possible that these are casts of the tubes, especially as they disappear on the addition of dilute sulphuric acid. (Miller.) "They may, on the other hand, be portions of the consolidated fibrils, or the sheath of Neumann which has broken up in this manner." (Tomes.)

In transverse sections the tubes are seen cut across and crowded with micro-organisms, and largely increased in diameter at the expense of the matrix. In many parts three or four tubes have run together, the matrix and parietes of the tube being destroyed.

There are some appearances in cross section which are difficult to explain. When several of these expanded canals approach one another they exhibit prismatic or angular forms, the intertubular substance having disappeared, but the limiting wall remaining intact. It is difficult to account for the disappearance of the matrix unless, as suggested by Dr. Miller, the germs form a pepsin-like diffusible element, which dissolves the intermediate substance, while Neumann's sheath is still intact.

Transverse sections also exhibit a peculiar condition, which has been described as the tobacco pipe appearance. Rounded masses of apparently homogeneous substance, which stains deeply, are seen to occupy the much expanded tubes, and in some specimens, micro-organisms in fine thread form, are seen running between and aronnd them, leaving a clear circle of tissue uninvaded by the threads. This latter appearance is seen more frequently at the margins of the preparations where leptothrix forms are most abundant. It seems to be a kind of secondary encroachment of these thread forms on the matrix.

THE MICRO-ORGANISMS CONCERNED IN CARIES.

According to Leber and Rottenstein the leptothrix buccalis, which is found abundantly in the mouth in the form of long thin threads and felted masses, is the principal organism concerned in dental caries.

This was disputed by later observers, although Dr. Miller, in a paper in the *Independent Practitioner*, speaks of a fungus which appeared as either micrococci, diplococci, bacteria, bacilli, or thread forms, and describes all these forms as sometimes found on a single thread, which he considered to prove their genetic connection. But he nevertheless admits, that while there occur in the mouth both monomorphous and plemorphous forms, stable forms, and forms that exhibit different transition stages, the majority of the micro-organisms found in caries are monomorphous.

Dr. Flugg (*Micro-Organisms*, English Edition, p. 393) says:—"It is evident that the designation leptothrix cannot be employed as a generic term, for the most various kinds of bacilli may produce these thread-like formations, and the threads which occur in the buccal secretions and in the deposit on the teeth, are probably nothing more than the thread form of various well-known, or still unknown and widely distributed bacilli.

"It is possible, for example, that bacillus butyricus not uncommonly takes part in the formation of leptothrix in the mouth; it is probable, however, that many other bacilli, more especially anærobic bacilli, do the same."

He points out that leptothrix threads do not appear to belong to one individual species, showing variations in thickness, flexibility, etc., and that the bacilli which have been isolated from the mouth by cultivation are not the forms which produce the leptothrix; or may it not be possible that the same micro-organism which would produce threads in the mouth might fail to do so under changed and artificial conditions?

Recently Dr. Kreibohm (*Centralblatt f. Bacter.* vii., 1890) came to the conclusion, both from microscopical examination and from cultivation, that leptothrix merely represents a peculiar phase of growth of different schizomycetes; he found four forms to develop leptothrix, two of which were bacilli, and two short bacteria.

Dr. Miller, in his last work, says: "In short, the name leptothrix buccalis, does not apply to any germ with distinctive characteristics. and the name does not deserve to be retained, since it has only been the expression of a confused and erroneous view."

Of twenty-two kinds of germs from the mouth, isolated by Dr. Miller in 1885, ten were in the form of cocci (showing very different dimensions), five appear as shorter, six as longer staffs. One species formed spirilla, another grew out into long threads. Of thirty species cultivated subsequently, eighteen were cocci, eleven staffs, one formed threads. In fluids, three grew to long connected or unconnected threads, one formed spirilla, eight were motile, fourteen motionless. He could only discover spore formation in three, the others seem to propogate themselves by transverse division.

They showed great variations in their relation to oxygen, ten only grew while there was free entrance of air, four grew better when exposed to the air, but could grow without it, eight seemed to grow well whether with or without oxygen. Eight produce coloring matter in gelatine cultures some days old, forming brick-yellow masses, such as may be seen occasionally on the buccal surface of teeth which are not kept well cleaned, the coloring matter being in the protoplasm or cell membrane, the cultivation medium not being colored.

In the pigmentation which occurs in caries the germs remain colorless, while the tooth itself is colored. These colors are not seen in early stages of caries, but only when it is far advanced, and usually when it is of a slow or chronic nature. Organic substances decomposed by micro-organisms assume a dark color, and in experiments which Professor Miller made on this point, he has detected iron in these discolored teeth.

He says, "Whether in caries of the dentine and enamel, the iron salt is formed in sufficiently large quantities, for the discoloration to be ascribed to that source has not yet been decisively ascertained."

Of the germs especially characterized by the formation of lactic acid in the mouth Dr. Miller has separated by cultivation twelve. He finds that "a great majority of the fungi found in the human mouth are capable of producing acid from cane or grape sugar, and it is probable that with very few exceptions, all can, when the proper conditions are presented to them."

He finds also that "the same fungus may produce an acid reaction in one substratum and an alkaline in another," and says, "In such a case we undoubtedly have two distinct processes going on, first, the nutrition of the organism accompanied by the appearance of alkaline products; secondly, its fermentative action, accompanied by acid products." He further points out that "under the various conditions and with the numerous fungi present in the human mouth the reaction may occasionally be neutral or alkaline, and this would give a temporary check to the advance of the caries." He considers that many of these fungi have a peptonizing action and that a number both possess this action, and are both capable of producing acid by fermentation of carbohydrates, and thus may be capable of producing the phenomena of caries in the mouth.

Galippe and Vignal claim to have isolated six kinds of micro-organisms taken from the tubules of dentine. They thus continue :—Among these six kinds we have always met with four in every one of the eighteen we have examined. We have met with another kind eight times, and with a sixth five times. (1) The first kind constantly met with is a short, thick bacillus, not forming chains. (2) The second kind is a bacillus, which is about twice as long as it is broad. (3) The third kind is a bacillus, which is very like the preceding one in appearance, except that it has no constriction. (4) The fourth kind is a very short, very thin bacillus, nearly as broad as long; at first it would be taken for a coccus. (5) The micro-organism, which we have met with eight times, is a bacillus, which is rounded off at its ends. (6) The micro-organism, which we have met with only five times, is a rather large coccus.

The micro-organisms owe their rapid development to the secretions, deposits, etc., of the oral cavity, and not until the tissue of the tooth has undergone a certain change, first decalcification, second peptonization, can they adapt it to their nourishment. The decalcification is produced chiefly by acid, resulting from the action of the organisms upon certain carbohydrates in the human mouth, while the peptonization is produced either by the direct action of the protoplasm of the organisms upon the decalcified dentine, or by the action of a ferment which they produce. In the study and separation of the different germs in the mouth, the mass of material has been so great and the opportunities for error so varied, that it has been found impossible, with few exceptions, to classify them or decide their conditions of life. There is still an immense amount of work to be done in this direction, and this can only be accomplished by investigators who will take up the study of separate species and work out their individual life history.

Our more complete knowledge of the morbid changes in dental caries throws great light upon the predisposing and exciting causes of the disease. Sugar being the food of these acid forming micro-organisms, all food containing sugar, or starch, which is converted into sugar in the mouth, tend to increase the liability to decay of the teeth.

Some interesting observations of Dr. Miller's on this point show that the acids formed in the mouth by cooked starch are at least as destructive to the teeth as those formed by sugar. Saliva containing starch shows at blood temperature acid reaction in as short a time as that containing sugar, and in equal quantity. He points out that starch and starch-containing substances are more hurtful than sugar, because sugar, being easily soluble, soon flows away and is thus rendered harmless. Starch clings longer to the teeth and thus exercises a more enduring action than sugar. This is confirmed by the observations of Hesse on decay in bakers' teeth. Vegetables seem to be less fermentable in the raw state than when cooked, hence the cooking of food would seem to have an injurious effect in causing caries. Meat when decomposed in the mouth does not produce acid, and the observations of my father and others, on the agency of the food in the causation of caries, show that races whose food is confined almost exclusively to meat show a very low percentage of decay. Dr. Black's researches, however point to a different conclusion, he says: "Races of men who have eaten largely of acid fruits have had less decay of the teeth than those who have been debarred by their position or climate from the use of such articles of food. Generally those tribes that have subsisted largely on meat and grain have suffered more from caries than those that have had a more exclusively vegetable and fruit diet."

From the conditions of fermentation in the mouth, one would certainly expect to find more caries in vegetable and starch eaters generally, than in flesh eaters, but as Dr. Black says, "Our knowledge is too meagre to warrant any lengthy discussion on this point."

An irritated condition of the gum, giving rise to an acid secretion, is supposed by several writers to be a cause of caries, but this is disputed by Dr. Miller, who points out that in pyorrhœa alveolaris, where an irritated condition of the gum exists for months, caries seldom occurs, and where decay does occur in cases where there is considerable congestion and separation of the gum at the neck of the tooth, it may be explained by the lodgment of food.

Among the predisposing causes of caries, defective structure holds the first place; deep fissures and cavities in the enamel, imperfections in the dentine, especially interglobular spaces (increasing the porosity of the tissue) irregular position of teeth leading to the retention of food, are other predisposing causes. Many diseases which give rise to an acid reaction in the mouth must be included among these, especially also diseases giving rise to dryness, *e.g.*, typhoid fever.

A predisposition to decay of the teeth is said to be inherited. Dr. Miller considers that this is only possible in so far as the inheritance of ill-developed and irregularly placed teeth is possible.

The surgical treatment of dental caries by the thorough removal of the diseased tissue, the treatment of the cavity with an antiseptic, and the insertion of a material which by its density and applicability to the walls of the cavity shall thoroughly exclude the germs, is, so far as our present knowledge goes, the most complete cure for the disease.

We can scarcely maintain, however, that with the most careful manipulation every germ is removed, but any that are left under a tight fitting plug are cut off from their food supply and their further growth prevented, seeing that they are probably incapable of attacking dentine in the absence of carbohydrate.

The incorporation of antiseptic materials in fillings has lately received some attention, and perhaps more may yet be done in this direction. Whatever the care taken by operator, we must all now and then meet with those most unsatisfactory cases where in spite of the most careful treatment decay rapidly progresses and filling seems to be only a partially successful mode of treatment. In such cases there is no doubt usually an undue porosity of the tissues of the tooth.

As to means of prevention, germicides, which can be used in the mouth of such a strength that they are not injurious to the system, have no very great penetrating power. The fermentative action of the micro-organisms at the bottom of cavities and fissures in the tooth is not interfered with by any mouth wash. In the mouth the difficulty of applying any thorough antiseptic treatment is very great, we may seal up a disinfectant in a pulp cavity very effectually, but it is impossible to obtain any prolonged and complete disinfection in the cavity of the mouth, such as is necessary for the prevention of caries. Thorough cleansing of the teeth is the most effectual means of preventing decay, and the experiment of Dr. Miller's above referred to, shows that by the use of antiseptic mouth washes, combined with thorough cleansing with tooth brush and silk, the amount of acid produced in the mouth may be very greatly reduced.—MUMMERY, *Dental Record.*

POULTICE NOT.

Case I. A Miss aged 11 years, had suffered intensely for some time. Her face and neck were very much swollen and pus was gravitating towards the neck. She had been under treatment by a physician who had ordered the application of a poultice—the very thing that should not have been done. I found the lower sixth year molar broken down and otherwise in a diseased condition. With some difficulty I opened the mouth sufficiently to introduce the forceps and extracted the tooth without much trouble. Pus flowed quite freely from the alveolus which was encouraged as much as possible. The poultice was ordered discontinued, and a compress made of a sheet of gutta percha was applied to the jaw and held by a splittail bandage. The patient recovered in a few days without an unsightly cicatrix, which would have been the result had the physician's directions been carried out. Had the case been relegated to a dentist at the out set, all the trouble would have been prevented.

Case II. A Miss aged 16 years, called to have a lower twelve year old molar examined. Owing to the broken-down condition of the tooth and the diseased condition of the surrounding tissues I advised its extraction. To this she would not consent, and owing to a little impatience manifested on my part, she became offended and went to her physician, with the result of necrosis and the removal of several sequestra of bone externally, leaving an unsightly puckered cicatrix. All the suffering and deformity would have been prevented by the extraction of the offending tooth. In this case also, the physician ordered poultices with the effect of forcing the pus to an external opening.—SHACKLEFORD, *Texas Dental Journal.*

Carelessness at home or of one's personal interests breeds carelessness of others' interests, and there is nothing which an employer notices more quickly, and is more willing and ready to appreciate and reward, than the display of care and interest in the little details by a workman.—*Manufacturers' Gazette.*

A MAN WITH A NEW SKIN.

Wesley Keller, "the man who was skinned alive," returned to work to-day. His case is curious. As an illustration of the nice powers of modern surgery, it will be talked about from one end of the country to the other.

On Wednesday, July 30th, Keller fell into a steam vat at the Indianapolis Veneer Works. He was taken out as quickly as possible, but he had been scalded from the sole of his feet to the middle of his chest. One arm was all right, but the other arm was blistered to the shoulder. Huge blisters puffed up all over the man's body and the fluid which had exuded from the flesh to fill them had been cooked to a jelly. In removing his clothes great strips of the outside or scarf skin came off, leaving exposed the true skin underneath, cooked until it looked like a parboiled lobster. His toes and ankles were so blistered and swollen as to lose nearly all resemblance to human members.

As soon as his fellow-workmen got Keller out of the vat they telephoned for the company's surgeon, Dr. Ralph Perry. "There is, perhaps, one chance in a thousand of saving this man," said the surgeon when he had looked at the burns. He set to work, however, and greased Keller from top to toe with a mixture of linseed oil and lime water. Then he swathed the body in cotton wadding, from which all possible impurities and disease germs had been removed by chemicals.

For two days and nights the case hung without loss or gain. A teaspoonfull of brandy was given every few hours, then a change came. Keller seemed to be choking. The throat became swollen, but this swelling was checked. The man's temperature rose a little. Fever set in. This gave great hope. The next morning Keller asked for something to eat, and actually ate a piece of pie and drank some coffee. The news of this shocked the surgeon at first, but he said: "I guess we'll win this fight, for a man who can eat pie with no skin on him has life enough left to grow a new one."

When suppuration began great care was taken to let out the pus at every point. The first dressing took three hours; the second still longer. Five days were consumed in taking off the bits of old skin, four hours each day being spent with the forceps, scissors and scalpel removing the skin layer by layer. Not a piece as big as a dime was forced. Keller's pluck was marvelous. The raw surfaces were dressed with an iodoform mixture and bandaged with soft stuffs.

Meanwhile the swamps of South Bend were being scoured for two-pound frogs. A bushel basket of these were cleaned with a germicide mixture and fed on pure food. The raw surface of Keller's body was tenderly washed with a clean warm water, then with peroxide of hydrogen, which destroys pus. The utmost cleanliness and wholesomeness was insisted upon. Just before applying the frog skin the raw surface was washed with a weak solution of corrosive sublimate. Everything ready, the first frog was brought out. With a quick snip of the scissors its spinal cord was severed at the back of the neck. Then the loose, pearly white skin from over the abdomen was quickly taken out and thrust into a dish of water which had been boiled, but which was now merely warm.

In the water had been dropped a little of the corrosive sublimate solution. Being cleansed, the skin was cut up into bits about a tenth of an inch square and applied to Keller's body—inside in, outside out. Powdered iodoform was dusted over the graft, which was sealed tightly from impurities.

Dr. Perry made grafts on forty-two occassions. Thirty-two operations were unsatisfactory ; ten were satisfactory. From each of the ten centers skin radiated, until now Kellear is "as good as new."

So to-day Keller went to work—the only man in the world who has been boiled and skinned alive, and who has frog skin where he once wore his own.—*Daily Paper.*

VALE PYOKTANIN! *AVE* METHYL-VIOLET!!

The following, slightly condensed, from Lehn & Fink's *Notes on New Remedies*, may save some of our "first on the ground" readers from the humiliation that sometimes follows publication of cases of remarkable cures effected by more remarkable remedies. Ten cents worth of dye-stuff is sufficient to keep the ambitious experimenter busy for a whole year :

Methyl-violet has its certain sphere of usefulness as an antiseptic, but the fancy, copy-righted name (Pyoktanin) under which it is being masqueraded, is calling down upon it a flood of censure, and the keenest professional scrutiny and criticism from all quarters. Perhaps the bold bid for popularity through excessive advertising has had this natural sequence. The medical profession is too often ready to accept novelties, but the attempt to force anything on it too rapidly is often also resented.

Patryek, of Oppeln, has tried pyoktanin, the new aniline antiseptic, in several cases of suppurative ear disease, and has come to the conclusion that it has little if any effect on the process of suppuration—at all events in this class of cases. He mentions, besides, that the staining of the hands and clothes, which was unavoidable, was a very considerable drawback.

Curtman, of St. Louis, in 1882, called attention to the fact that the anilins had the peculiar property of destroying germs, he having been led to the conclusion by observations made while engaged in staining micro-organisms. Of course, no attention was paid to this, perhaps because it emanated from the West, and it was only after a Strasburg professor spoke that any attention was paid to it Of course this is what regularly occurs with us, and we only call attention to the fact simply to show that there is something in the "rowdy West," which will never be appreciated until the latter learns to assert itself.

Scheffels, of Weisbaden, reports disappointment experienced in testing pyoktanin in the treatment of cornea ulcers, and in the most courteous manner imaginable records his dissent to the claims made for it by Stilling. The latter had expressed the opinion that pyoktanin was one of the best remedies for the treatment of ulcer of the cornea, but Scheffels had no good results with it at all.

Fox, of Philadelphia, has also been disappointed in the same way, and the hopes excited by Stilling's reports need confirmation.

The *Chemist and Druggist* says: Since, with the introduction of coloring agents as antiseptics, what may be called a new step was taken, or rather, perhaps, a new source indicated for remedial agents, we may expect to soon find other substances obtained from the same class and brought forward as medicants, the value of which may exceed that of the first found. We have now to note methylene blue, which is claimed to possess analgesic properties. Those who have a great admiration for blue blood should seize the present opportunity of obtaining it cheaply, since, besides relieving them of muscular or articular rheumatic pains, it passes so rapidly into and through the circulatory system, that an hour at the latest after the dose the urine is colored pale green, then bluish green, and after four hours a fine aristocratic deep blue.

There is little doubt that if Stilling's recommendation of Methyl-violet had been less pretentiously introduced, and the royalty on the copyrighted name less exhorbitantly rated, a fair measure of success and much less criticism would have resulted.

HEADACHE AND ACHING OF THE EYES.

Readers interested in this subject are referred to the leading article in the ODONTOGRAPHIC JOURNAL for January, 1889, by Dr. Wheelock Rider, a well known eye specialist of this city. The article in question has been widely copied by other periodicals, with and without proper credit.

Eye strain should be the first thought suggested by any complaint of headache, for in our day and civilization it is by far the most common cause of that symptom. It enters as a factor into the causation of nearly all headaches not due to pyrexia, toxæmia or diseases of the brain or its membranes. The simple existence of headache, therefore, should suggest eye strain, but frequently a careful inquiry as to the manner and time of occurence of the attack and the location of the severest pain will be almost conclusive as to the origin of the trouble.

Often it comes on whenever the eyes are used, and is absent when the eyes have had a proper season of rest. The occasions of most severe requirement in the direction of eye work are the doing of anything requiring accurate near vision, taxing both the accommodation and the convergence, or traveling, shopping, attendance at public gatherings, which entail more use of the eyes than the patient is at the time conscious of, and often under unfavorable conditions.

In hyperopia in young people, the accommodation is in excessive use so long as the eyes are open and the attention fixed on any visible object, and hyperopia is the most common cause of constant headache. The writer was formerly subject to a constant headache whenever confined to the house, and regarded it as caused by breathing vitiated air, until it was quite cured by the correction of his hyperopic astigmatism. Many persons have the same idea as to the causation of the headaches they always experience when attending the theater or other place of public amusement, and which are really due to eye strain. Others ascribe these headaches, and those experienced in traveling and shopping, to exhaustion. This is nearer the truth, only they commonly have in mind a condition of general exhaustion, whereas it is largely one of local exhaustion of the special nervous apparatus concerned in the act of seeing.

Congestion, irritability, or inflammation of the eyes and their appendages, should always suggest the suspicion of eye strain. A single attack or manifestation of this kind has no special significance, but repeated attacks of inflammation, or prolonged congestion, or irritability are exceedingly suggestive of a continuing cause, and the most common of these is the one now under discussion. No case of chronic inflammation of the margins of the lids, or of recurring conjunctivitis, or repeated sties, has justice done to it until it has been carefully investigated for eye strain. Persons at the period when they begin to feel the effects of the loss of accommodation in presbyopia or absolute hyperopia suffer from repeated attacks of conjunctivitis, which they commonly ascribe to "taking cold in the eye," but which are cut short by the use of the appropriate lenses, and which, if unchecked, would tend to establish a chronic catarrhal condition, which is a chief discomfort in the lives of many people.

I should like, also, adds the editor of the *Times and Register*, in a recent issue, to call attention to car sickness in connection with eye strain. I have had eight or nine cases of this kind, all of which were relieved by glasses. One case was that of a gentleman who every journey had car sickness. While he had the mydriatic in his eyes he went to Washington, and suffered no incovenience whatever. Subsequently, after he had glasses, he made a trip to St. Paul without any of the former trouble. Recently I have had two cases—one that of a girl who could not ride a short distance in the street cars without vomiting. I found a decided degree of hyperopic astigmatism. With the mydriatic in her eyes she rode home without her usual trouble.

A strange thing with reference to eye strain is that it often exists to an exceptional degree without showing any symptoms in the eye. The patient will often say that the eyes are perfectly good and have never caused any irritation. The reflexes seem to have settled in some other place. This is an interesting pathological and physiological question.—*Scientific American.*

THE PHYSICIAN AND THE PLUMBER.

The physician drives to the residence in broadcloth, silk hat and gloves, enters at the front door, is shown into the parlor or conducted to the sick chamber, is treated with great consideration and served with the utmost courtesy. Every aid or service that can be commanded is rendered him ; all that money can purchase or love and sympathy inspire, is placed at the service of the physician. Every effort of the family, of relatives and friends, and even of strangers, is given to aid the doctor to soothe and comfort the patient and rebuke the disease. There is nothing in the range of human possibilities ever denied the physician in his efforts to heal the unfortunate sick.

How is it with the plumber? He walks to the residence dressed in his greasy overall and blouse, carrying his bag of tools ; he enters at the basement or servant's door ; he receives no welcome, no courtesy, no aid. No part of the resources of the family or friends is given him. The family that stood sympathizingly by the doctor in the luxurious chamber are now in the parlor or at the matinee, while the plumber is in the basement fighting with his skill and scientific knowledge the disease germs invading and threatening the life of the household

And what is the difference between the two? The doctor is called in to cure probably the same disease that the plumber could have prevented ; yet the plumber is in a dirty, neglected basement or water-closet, and for a meagre and grudgingly paid remuneration, prevents the sickness and suffering the doctor seeks to cure for a royal and liberally paid consideration.

But they tell us that the plumber is only a mechanic. If he is a mechanic he has that advantage over the physician, who is not. But is he only a mechanic? He may put in a system of plumbing mechanically perfect in every respect and yet it would annihilate a family in six months. He could employ only his mechanical skill and ruin the health and destroy the life of a whole city. It is his scientific knowledge that is of value. It is that knowledge which not only makes the healthful home, but contributes so largely to the advancement of sanitary intelligence. The physician spends one, two, or at most three years, probably six months out of each, in the study of his profession, and sets out a full-fledged doctor, while the apprentice at plumbing must serve five or seven years. The plumber could acquire the mechanical skill of his trade in a short time, but to gain the scientific knowledge of his profession he must devote two or three times the amount of time in which the doctor is required to gain his knowledge. They tell us the work of the doctor is intellectual. I cannot reflect in the least on the learning and intellectuality of the noble profession of physicians, but who can stand in the presence of some of our great public buildings and private mansions and say that the agent that planned them, hung their drainage, and placed their sanitary fixtures, was not intellectual? It is not only the hands but the head of the plumber that places about the home its sanitary safeguards. The plumber is not a machine. He is of necessity an intellectual being, with a brain as big as that which directs any art, science or profession we have.

Recently I had a talk with the managing editor of the *Sanitary News*, whose correspondence and contributions embrace this whole country and parts of others, and he informed me that of the contributions to his journal, and, as he believed, to the general literature of sanitary science, those from plumbers were superior and the most important means for the promulgation of sanitary knowledge.—YOUNG, *Sanitary News.*

PROF. DR. W. D. MILLER.—OVATIONS OF HONOR AND ESTEEM.

Unusual space has been given this month to the reports of banquets recently held in different sections. The remarkable ovations that have met Professor Willoughby D. Miller, since his advent to our shores, have a significance that is at once an honor to him as they are interesting as a mark of progress in the manner of treating our original workers and thinkers. It has been given to but few scientific men to receive such marks of approbation. The walks of science are in silent cloisters,—in the laboratories,—away from the plaudits of men; indeed, it may be supposed the very entrance of possible praise or blame of an outside world would be inimical to true investigation. The seeker after truth needs no incentive but the value of results. The ambition of the scientist lives on what is developed, and even the thought of the intruder is a disturbing element.

Hence, it is very true, that the spontaneous ovation of esteem must have been in the light of a surprise, and, perhaps, in some measure not quite comprehended, as the honest investigator is certain always to undervalue the results attained, and looks upon them merely as stepping-stones to something higher.

While these remarks are unquestionably true, the present outburst of feeling is at once gratifying, and in a measure represents a growing conviction that the time has come to recognize the recluse of the laboratory as the man of the hour, the one who is erecting the foundations for all the knowledge we possess, or are likely to come into possession of,—the "house we live in." It is, therefore, significant as a time of mental growth, and celebrates this quite as much as it means honor to the man.

This is the view in the broader sense of scientific work ; but in the more limited range of dental labor it means even more than that, as it is the marking of an epoch, the celebration of a period when the dreams of a past century have reached an actual realization. It is the culmination of the work of many. It means, if it means anything, that a long and difficult problem has been solved. It means that the opprobrium of the dental and medical profession (for they are equally involved) has been removed, and that by a dentist. That this is worthy of rejoicing along with the other great events of history must be clear to the average mind.

The fact brings up, however, this important reflection, a point that never should be lost sight of,—that no one man does the whole work in a given line of investigation. This can be said without disparaging in the least the results attained by any. The work of the world is an aggregation. It is developed from the simple atoms of thought to the ultimate perfected truth.

When the scientific mind of the dental profession examing the steps that have led to this elucidation of dental caries, the impression must be strongly felt that it has been a progressive development from the time that Leeuwenhoek (1722) demonstrated, with very imperfect means, the existence of low forms of life. From which gradually grew the idea that the invisible life was a powerful factor in changing conditions in the visible world, a fact freighted with immense results from the future life of peoples, and which led up to the remarkable work of the present.

In the special subject of dental caries we trace a direct series from Ficinus (1846), with his "Denticolæ," which became "Bühlmann fibres" by union, to Tomes (1848), who found a "peculiar vegetable growth that infested carious teeth," to Klenke (1850), with his purely inflammatory dental caries, "protococcus dentalis," and putrefection, and, last, chemical action. From Klenke to Leber and Rottenstein, with their brilliant monograph, that stirred the dental world as nothing else previous to the Miller papers. Then came the valuable work of Milles and Underwood, and from this to the subject of this article. Each of those mentioned performed a portion of the labor that led to the final conclusions. It is, therefore, proper that we should recall the underlying work of these men, some pioneers, and others contemporary with Dr. Miller. In a review of the past and present, let us not forget also the labors of others not already mentioned,—of Ehrenberg, Neumann, Wedl, Weil, Walkoff, and Koch, in Germany, Pasteur and Magitot in France, and of Clark, Black, and Abbott in the United States.

The elucidation of the mysteries of life is but in its infancy. The problems may never be wholly solved; but when one step has been finished it is our duty to stand upon it, and, looking forward, give honor to the builder.—EDITORIAL, *International Dental Journal.*

OUR CREED ON PULP CANAL FILLINGS.

If root-canals are properly prepared and filled, there will be no future disease. The question is, How shall the filling be done? Excellent root-fillings can, and often are, made with gold foil, tin foil, and amalgams; but in many ways these materials are inferior to gutta-percha and oxychloride of zinc, and in no respect are they superior. As for cotton as a permanent root-filing, we cannot conceive a decent reason for its use, except as a vehicle for the introduction of the oxychloride. Of the two materials, oxychloride and gutta-percha, we give preference to the former, for two reasons; first, because the union between the materials and dentine is perfect; and second, because it cauterizes and makes fixed material of the organic matter which may remain in the canal and in the dentinal tubes; it also makes a better foundation for the gold to be introduced than gutta-percha does. On the other hand, it is objectionable on account of the fact that it may be forced through the apical foramen; therefore the foramen should first be securely closed with a small point of gutta-percha, or a small amount of thick chloropercha, when it is impossible, on account of small canals, to use the warmed solid material. This, we think, is the best way to perform the operation, in the light of past experience among the most careful operators.

When gutta-percha is used for the entire filling, and the operation is commenced with chloro-percha, care must be taken that the solution is not very thin, because of the shrinkage on evaporation of chloroform. If difficulty is experienced in certainly getting the material to the apex, introduce first a shred of cotton moistened in chloroform alone; and the gutta-percha, quickly introduced after withdrawing the cotton will surely be conducted to the extreme point which has been moistened. Use the chloro-percha only as a starting procedure, and fill with solid points and pellets, pressing firmly, that no considerable amount of chlora-percha will remain. After evaporation has proceeded, press again to insure solidity.

We hear much about the leakage of gutta-percha; but a root filling inserted as we have described will not, we believe, leak, unless there has been enlargement at the apex, so that a good closure is impossible. However, to avoid any possibility of risk, we incline to confine the use gutta-percha to the immediate vicinity of the apex, then filling the canal with oxychloride of zinc as before described. By this method the canal is perfectly closed with the imperishable compatible material, and the result will show better success than can be obtained by any other method now known to dental surgery.—EDITORIAL, *Western Dental Journal.*

NEW METHOD OF VULCANIZING RUBBER PLATES.

The effects of shrinkage may be seen, and have often been noticed by those who, in the process of repairing rubber plates, have occasion to remove a block of teeth therefrom. If there is any considerable amount of rubber under the teeth, a space will be found between the two into which a thin instrument can be easily passed. This space is usually a receptacle for the debris of food, which, being there retained, decomposes and gives off disgusting odors.

It is the frequent experience of those wearing rubber plates that, notwithstanding any efforts which may be made to secure cleanliness, the odor from them will be sufficiently strong to affect the breath. The reason is apparent if there are pockets under the teeth full of decomposing organic matter.

This condition of things was known and recognized in gold plates, when the teeth were ground and fitted to the plate, and afterward backed and soldered thereto. No one could make a joint under such circumstances so close as to exclude organic matter. And one reason why rubber came so rapidly into use, was the fact that it seemed to promise immunity from this defect.

Sometimes defects betokening shrinkage will be apparent, as when crevices are seen at the shoulders below the crowns of bicuspids and molars; but it is more often the case that the dentist is wholly unaware of any imperfection in the plate. The joints between the teeth and rubber will appear to be perfect, the defects remaining unsuspected, possibly until repairs are needed, and it becomes necessary to remove some of the teeth from the plate. At this it will often be found that the teeth are imperfectly supported, there being spaces under them filled with the debris of food, and that, moreover, the pins are not well anchored in the rubber. If plain teeth have been used, the defects are often apparent from the start, and single teeth, standing alone, are sometimes so loose as to necessitate making the plate over.

The assertion is here made that the defects mentioned above are the rule, and not the exception ; and although the statement will, no doubt, be denied, it is the fact that their existence can be demonstrated in the majority of rubber plates.

There is also a question whether shrinkage is not to blame for the difficulty sometimes experienced in fitting rubber plates to mouths requiring a considerable amount of so-called "restoration," involving the use of a large amount of rubber over the alveolar ridge. It is the experience of any dentist who has had much to do with rubber plates, that the best fits and most satisfactory plates are those in which it is possible to set the teeth close to the alveolar ridge, leaving but little rubber under them ; while annoyance is usually experienced when the use of a large quantity of rubber is required at this point. These facts have been recognized and deplored by many dentists, but as yet no one has pointed out a method by which shrinkage can be perfectly controlled. It is almost a self-evident proposition that if the rubber can be made to apply itself closely to the teeth, leaving no interstices for the detention of particles of food, securing perfect support to the teeth and perfect anchorage for the pins, that a more cleanly, durable and satisfactory denture can be constructed on vulcanized rubber than has heretofore been done.

A few experiments recently made have thrown some light upon the subject, and it is now believed that a method can be pointed out by which the defects and annoyances heretofore alluded to can be wholly overcome, and that the perfect vulcanization of a dental plate can be made an easy matter. The results of these experiments and the process of vulcanizing deducted therefrom, will form the subject matter of the succeeding portion of this paper.

To determine the time at which shrinkage occurs, a number of samples of rubber were vulcanized at times varying from ten to ninety minutes at the same temperature, 320° ; the Coolidge Regulator being used to insure uniformity in temperature.

The specific gravity of the specimen of unvulcanized black rubber was 1.13398. The same rubber vulcanized for forty minutes at 320° and imperfectly cured, had a specific gravity of 1.19082. At the end of one hour, when it was thoroughly hard, it was 1.19284. It will be observed that the increase of specific gravity for the first forty minutes was $1.19082 - 1.3398 = .05684$, while for the next twenty minutes it was only .00202 ; showing that the greater part of the shrinkage took place in advance of the hardening process, and was nearly completed during the first forty minutes. The relative bulk of the same mass of rubber, soft and vulcanized, would therefore be 1 to .9506.

The writer has been unable to fine any data giving the rate of expansion, by heat, of crude rubber. Samples from different localities differ to some extent in their physical characteristics and in their composition; and it is quite possible that their rate of expansion, if ascertained, would be found to vary. It has been found experimentally, however, that the expansion of vulcanizable gum from 212° to 320° amounts to about as much as its shrinkage in vulcanizing.

The expansion of vulcanite (black) is set down as .0000428 of its length for each degree (Fahr.) between 52° and 77°. Betweeen 77° and 95° it is .0000468 for each degree. These numbers give the average between the temperature named. It will be observed that the rate of expansion increases with the temperature, as is usual with solids. Allowing that the rate of increase remain con-constant, its linear contraction in cooling from 320° to 80° will be as 1 to .99369. Its cubical contraction, or decrease in bulk, would be as 1 to .9812; much less than its shrinkage. By the conjoined action of shrinkage and contraction, a mass of rubber, being vulcanized, would be reduced in bulk as 1 to .9388.

In the ordinary method of moulding a plate in a bolted flask, gateways are cut, to provide for the escape of surplus rubber, and the mould is packed with a sufficient quantity of gum to fill it. The two parts of the flask, being bolted together, are heated to soften the rubber, and the flask is closed; any surplus rubber oozing from the mould into the gateways. The flask is then put into the vulcanizer, and heated to the vulcanizing point. While the heat rises, the rubber continues to expand; and it is constantly oozing from the mould into the gateways. If it was cooled, even before it reached the vulcanizing point, there would certainly be a vacuity somewhere in the mould from contraction.

The moment the vulcanizing point is reached, and the temperature becomes stationary, shrinkage begins; the expansive pressure is relieved, and in a few moments the mass of rubber becomes too small to fill the mould. As it adheres to the surface of the plaster, it is drawn away from the teeth and pins, to which it has less adhesion; as the rubber will not pass from the narrow gateways back into the moulds to fill the vacuity, except possibly to a very limited extent.

If radiating gateways are not cut extending into the mould, but merely a circumferential chamber of escape be employed, from which the rubber in the mould is entirely cut off as soon as the flask is closed, the use of bolts to hold the parts of the flask together will be found to be very dangerous. The rubber, in its expansion as it is heated to the vulcanizing point, will exert a force which the plaster mould cannot resist, and the consequence will be the injection of rubber into the joints, and possibly the cracking of the blocks and their displacement.

If the mould, prepared in this manner, is held in a spring clamp while vulcanizing, the expansion of its contents will cause the spring to yield, allowing the flask to open a trifle ; and a certain quantity of the rubber will escape into the chamber surrounding the mould. The escape will not be free, and the natural elasticity of the rubber will allow of the retention of some of it which would escape if the radial psssages were present. The increased pressure upon the rubber will be likely to cause its injection into the joints between the blocks, and if any of it escapes there will be a vacuity from shrinkage ; it is quite possible, however, that it will be less than in the former case.

To produce perfect results, the mould must contain just that quantity which will fill it when vulcanized, a temperature so low that it will have no tendency to "flow," or change its shape permanently.

After the rubber is pressed into the desired shape, or in other words, after the mould is packed, it must be relieved of any constraint which will resist the expansion of its contents by heat and cause them to escape.

After the shrinkage incident to vulcanizing has taken place, the mould must be pressed, to force the rubber against the teeth and pins ; and this pressure must be continued until the plate is nearly or quite cold.

To test this theory, a set of teeth was mounted, setting them at a considerable distance from the model. They were flasked, the usual gateways were cut, radiating from the mould, with an encircling channel. The mould was then packed with black rubber, substantially in the manner above suggested. The flask was left free to open as the rubber expanded by heat, and pressure was applied to close it, nearly at the conclusion of the vulcanizing process. Another set, a counterpart of it, was mounted, flasked in a bolted flask, packed with the same kind of rubber, and vulcanized in the ordinary way ; the flask being firmly bolted during the process. Both sets were allowed to remain in the flasks until cold. When they were vulcanized and finished, one set could not be distinguished from other. They were both perfect, so far as could be judged by outward indications.

A bicuspid block was then broken out of each set. In the first set, the pins which held the block were found to be firmly held by the rubber, which also fitted closely against the under sides of the teeth, so that the joint was apparently perfect. In the other, the pins were loose ; and there was a considerable vacuity under the remaining blocks, nearly a thirty-second of an inch in depth.

The sound given forth by these plates when dropped upon the table was distinctive and charateristic. The first gave a ringing sound as though it was but one piece ; the other rattled as if cracked. They could be easily distinguished from each other in this way with the eyes shut.

This experiment was performed with the Crane vulcanizer, which has a screw-press attached to it, with a spring interposed between the screw and the presser-foot which bears upon the flask. This mechanism gives perfect command of the amount of pressure applied to the flask and the time of applying it. It therefore fills all the requirements of the method of vulcanizing suggested above ; giving a gradual and equable pressure, which can be applied at any time during the vulcanizing process, as desired. The amount of time and attention required is but a trifle more than is requisite with the old method.

A number of plates have since been moulded by this method, for use. Their adaption to the mouth is good, and they have proved satisfactory in every way.

The same result can be attained in an ordinary vulcanizer, but it will be necessary to heat the flask twice. It will also be advisable to use some kind of a spring clamp, possessing power enough to make the rubber flow and re-adapt itself when re-heated. The *modus operandi* will be as follows : Pack the mould with rubber as usual, and close the flask either with bolts or a flask-press, as may be preferred. Before putting it in the vulcanizer, slack off the bolts sufficiently to allow the flask to open when the rubber expands by heat, so that it will not be forced into the gateways. After it is vulcanized, let it cool slowly until there is no steam pressure upon it ; then remove the flask, place it in the spring clamp, replace it in the vulcanizer and reheat it to 320° and allow it to cool slowly. It is *always* best to keep the flask in the clamp and under pressure until cold.

In this case, the mould, contains more rubber than it would if held firmly, by the amount which would have been forced into the gateways by expansion as the heat was raised to the vulcanizing point ; and this amount is sufficient, or nearly so, to completely fill the mould while hot and after vulcanization. The rubber is harder and not quite so tractable as when partly vulcanized, and the process requires more care and attention that it required with a vulcanizer capable of pressing the flask at the proper time while vulcanizing ; but the operator is thus enabled to test the theory herein set forth, and to satisfy himself of the benefits to be secured by putting it into practice.

This process may be varied by first vulcanizing the plate about three-fourths the usual time ; then applying the pressure and re-vulcanizing to finish.

The following precautions must be observed. Any sudden change in the steam pressure may result in the formation of steam in the flask, and injury to its contents ; as it is not held together as it usually is. Therefore no escape of steam, by opening the blow-off or blowing out the safety disk, should be allowed. Neither should the vulcanizer be suddenly cooled by putting it in water, or otherwise.

It is believed that the results obtained will amply repay the operator for what little additional trouble he will incur in using this method of vulcanizing.—SNOW, *Dental Advertiser*.

BENEFICIARIES.

There are some evils attending the practice, which many colleges have, of admitting students as beneficiaries on the recommendation of the State Societies or Boards, which has not, to my knowledge, been brought to the notice of the profession.

It was for a long time the custom of the Georgia State Dental Society, on the recommendation of a student by the State Board, to give a recommendation to the colleges, who received students on those terms, that he might be admitted free of college fees. The conclusion was soon reached, however, that the method was unsatisfactory in various ways and the society took an early opportunity to pass a resolution condemning the practice. The National Association of Dental Examiners also passsed similar resolutions, I think in 1884, and it is to be hoped that all State Boards and Societies will adopt and observe these resolutions. In no case where the Georgia Society recommended a candidate have they turned out satisfactory to the society or profession. I have in my mind's eye a number of cases where the persons, after graduating, instead of coming forward like men, placing their shoulders to the wheel to assist in elevating the profession, have skulked around, taken underhand advantage of and bushwhacked under the very nose of the men who signed petitions to have them appointed beneficiaries. A man who possesses the proper metal to make a success in life and his calling had rather work his way through and pay full fare than ask assistance from any one. Then, again, it is not always men who deserve assistance that get it. It is presumed that a man who asks for such assistance is unable himself or with the assistance of friends to obtain money to pay his fees ; while to my certain knowledge men have been entered as beneficiaries who were well able to procure the luxuries of life, while others have worked their way through the same class that could barely procure the necessaries. This is not just, and when justice to all alike cannot be obtained the whole idea should be abandoned. Then if we should send beneficiaries to one college others must of necessity follow suit, which opens up a flood-tide of beneficiaries that hardly has a termination. With about forty-two States and twenty-five or thirty colleges, and each college receiving a beneficiary from each State, where would it all terminate ? Let every man enter on an equal footing and mete out justice to all alike.—EDITORIAL, *Southern Dental Journal.*

HOW TO DEAL WITH ANOTHER MAN'S PATIENTS.

Few professional men have been so blessed as to have passed through their career without being forced into unpleasantness through misunderstandings arising out of their relations with other men's patients. In many ways this occurs : A. goes away and asks B. to look after casual callers during his (A.'s) absence on a holiday or through illness. Patients, possibly new ones to A., but recommended to his house by other patients, come to B., like him and wish to remain with him, and allege they do not know A. and do not desire to leave B. having once gone to him, Take another case : C. has a misfortune and either gives the patient more pain than he, the patient, thinks necessary and so betakes himself to another dentist D., again recommended by friends. It also happens that some measure is suggested by one dentist which is not to the taste of a patient and so the latter hies him off to get another dentist's opinion, often enough not mentioning names until the opinion is expressed, and if this is unfavourable to the previously proposed operation the patient may elect to remain with No. 2 dentist and forsake No. 1.

Children will often enough lead their parents to change their dentist, because, Mr. So-and-So is so "rough to poor little Willie." A bad smash at one house followed by a successful extraction elsewhere, may lead to a alienation of patient and dentist, even if the smash was absolutely unavoidable and the lucky extraction the fruit of fortuitous inflammation plus manual dexterity, leaving it an open question which factor played the larger part in the happy result. Under any and all of these circumstances how is the dentist who is appealed to in the second place to act, and what must his demeanour be towards his predecessor whose patients the people were before they came to him? Certainly, no item of professional ethics bristles with more difficulties or presents larger scope for the exercise of tact and judicial honesty. It is too often lost sight of that doctors and dentists alike have no vested interests in their patients, the practice of giving money for the goodwill of a practice gave rise to the idea, but undoubtedly, patients have an absolute right to change their dentist as often as they please, and at the present day they are more than ever disposed to act upon their rights and seek aid in their dental troubles where they consider they can most satisfactorily obtain it. Patient-grabbing is quite another thing to accepting a patient who deliberately selects between A. and B. and prefers B., although, in this case, unless there is a definite cause of complaint against A., it is certainly B.'s duty to point out that the patient being recommended to A. is *ipso facto* his, and to send the person on to A. upon his return to the charge of his practice. Where patient-grabbing comes in is when a dentist asked casually to look in a mouth, volunteers a sneer or faint praise of work already placed in the mouth. In every case it is accepted by professional men as being quite outside the bounds of etiquette to criticise unfavourably the work of another duly qualified practictioner, and the offence is aggravated when the criticism is offered without solicitation. Probably, no better advice upon this most vexed question in professional ethics can be given than that implied in the dictum, "do to others as you would that they should do to you."—EDITORIAL, *Dental Record.*

LABORATORY HINTS.

Plaster Casts.—Have the following articles on your bench ready for use: 1st. SOAP VARNISH, made by dissolving English white Castile soap in soft water to the consistency of milk.

2d. DREDGE CUP. Take a half pound baking powder can, and have your tinner make a cover for it, having the entire top part made of strainer wire, such as is used on milk pails. Keep this cup always filled with fine, strong plaster.

3d. Bottle of Mixing Solution. Consisting of soft water and two per cent. of alum, or borax, or sulphate of potash.

4th. Pepper-box, filled with fine, powdered soap stone, and a jeweller's extra soft bench-brush.

We will suppose you have a perfect inpression for full mouth. Coat the impression with soap varnish, brushing it in thoroughly till a good lather forms ; now rinse off with cold water and it is ready to pour. Next pour in your bowl the right quantity of mixing solution, then add the plaster, shaking it in carefully from the dredge cup till it comes a little above the surface of the solution ; stir a little. If not thick enough, shake in more plaster, for to have a good, smooth, hard model it should be worked as thick as possible, and and it can be worked very thick as the solution used causes it to set slowly. Now fill the impression slowly, tapping the bottom of the cup to make the plaster settle and drive all air to the surface. When the model is hard enough, separate it from the impressison and let it stand to dry. Shake the soap-stone over it thickly and polish with a jeweler's brush till perfectly smooth. A model made thus, and then before packing, covered with the tin-foil, or liquid tin, gives a plate as smooth as when vulcanized on solid metal cast.—Steele, *Items of Interest.*

DENTAL ANALYTICS.

The number of chemicals used in the ordinary course of practice by dentists is not large, but just because of their small number it is very important to know that they are good. The most important nowadays are carbolic acid, aromatic sulphuric acid, a solution of bichloride of mercury, and hydrogen peroxide. Of these, the first two are usually purchased in standard strength and do not alter materially by standing; but the last two are very liable to, and actually do, undergo considerable changes.

The solution of bichloride of mercury which is usually applied in the strength of 1 to 500, or 1 to 1000, may be considered a very dilute solution ; under the influence of sunlight the mercury is slowly reduced by the organic substances in the water, and a whitish precipitate of calomel is the result. As the calomel is enert for the purposes of a dentist, the solution has become so much weaker ; and if the water used is very rich in organic matters or iron salts, a solution of 1 to 1000 may lose all its soluble mercury and become actually inert.

A dentist is usually too busy to make a complex test to see whether his solution of bichloride of mercury is still reliable or not. If he were inclined to make such a test, a very good one would be the addition to the solution of $HgCl_2$ of a fresh solution of sulphuretted hydrogen in water. A solution 1 to 5000 turns black, and deposits a measurable amount of mercuric sulphide. A solution of 1 to 1000 becomes dark brown, but the deposit is slow in settling. Even solutions of 1 to 500,000 are still slightly colored brown by this reagent.

Another fair test is iodide of mercury. More dilute solutions do not give reliable tests with this compound.

Besides, all these tests with solutions require a considerable amount of the solution to be tested. I have tried to obviate that objection and to contrive a method by which such solutions can be tested, even roughly, quantitatively, with a simple drop.

For this purpose I saturate a nice grade of paper with a solution of a given amount of iodide of potash in water; with the proper gauging of this solution, after it has dried on the paper, a drop of the solution of bichloride of mercury (1 to 500) will produce a scarlet spot when dropped on the paper; a solution of 1 to 1000, a yellow spot; a more dilute solution no spot at all. To obtain this result, a certain strength of the solution of iodide of potash gauged for the paper to be used is required. As the iodide of potash is apt to undergo slight changes when exposed to the atmosphere, due to the liberation of free iodine, it is desirable to make the solution of iodide of potash slightly alkaline, which would prevent, to a great extent, the paper from turning blue.

Another important compound much used of late by dentists is hydrogen peroxide. I need not enter into the manner of making it, and what it is. Suffice it to say that the standard grade in the market ought to contain not less than twelve volumes of oxygen. This "twelve volumes of oxygen" means that on boiling one ounce of hydrogen peroxide it ought to give off twelve fluidounces of oxygen. Even with this twelve volumes of oxygen, the quantity of pure H_2O_2 in solution is quite small, only about 2.8 per cent. By keeping, oxygen is slowly given off, and I have found that in course of half a year a solution which started with twelve volumes of oxygen contained only five volumes.

As the volume test for oxygen is complicated and cannot well be performed by a busy dentist, some simple tests are desirable by which with one drop a dentist may tell approximately the strength of his hydrogen peroxide.

I have found that a paper saturated with a mixed solution of iodide of potash and dithionate of soda answers the purpose. The hydrogen peroxide liberates the iodine in the iodide of potash, but this liberated iodine is immediately seized by the dithionate of soda, and a colorless solution is the result. But if enough hydrogen is applied, the blue spot will appear, because more iodine is liberated than can be used in oxidizing the dithionate of soda to a tetrathionate of soda. Thus the problem of such a test-paper resolves itself to a proper proportion between iodide of potash and dithionate of soda; to make the reaction more pronounced still, a little starch-paste is added.

I have thus succeeded in producing a paper which, with one drop of hydrogen peroxide of twelve volumes of oxygen, produces the blue spot in twenty seconds; with six volumes, in from one to two minutes; and with four volumes essentially no blue spot is produced, only possibly a blue rim.

Hydrogen peroxide with only four volumes is quite unreliable.

Dentists have also occasion to make other tests in their practice, which, with appropriate test-papers and clear directions accompanying them, can readily be made.—MAYR, *Dental Cosmos*.

WARD'S NATURAL SCIENCE ESTABLISHMENT.*

In establishing his natural history emporium at Rochester, N. Y., Prof. Henry A. Ward has aimed

(1.) To gather in one accessible locality general representative objects of natural history (with the exception of botanical specimens) from all parts of the world.

(2.) Where the actual specimens of typical forms are too small or difficult of preservation, to fill the gaps which must otherwise exist in cabinets, he has models of the original specimens, exact in form, size, and color, with occasional enlarging to a given scale of more minute species.

(3.) To conduct the collection to a large extent in *person*, that he might become himself acquainted with the best collecting grounds, and secure the finest specimens.

(4.) To discrimate constantly between things which are mere curiosities and those of educational value, rejecting all indifferent specimens.

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*Recently incorporated and its capital greatly increased..

(5.) To secure or contrive the best methods of preserving and mounting all classes of specimens, and the most effective styles of displaying objects in museums. For the above purpose, a score of the best trained workmen, taxidermists, osteologists, joiners, blacksmiths, and others, foreign and native, are in constant employ in his workshops.

(6.) To use his scientific knowledge to the benefit of teachers, by studying carefully the needs of the various departments of natural history in schools, and by arranging various educational sets of specimens in progressive series.

(7.) To keep a large stock of material always on hand ready for final mounting. The size of this stock may be partially realized when it is known that no less than *eighteen* different catalogues are required, and issued, to describe the objects and sets of objects belonging to the various departments of the subject.—*Journal of Education.*

STATES IN WHICH DIPLOMAS FROM REPUTABLE SCHOOLS ARE NOT HONORED.

In response to many inquiries, we will say that graduates in dentistry are required to stand examinations before registration, in Massachusetts, New Jersey, Minnesota and Colorado. We sincerely hope the number will never be increased. It is an example of over legislation such as all State governments are apt to pass when short-sighted prejudiced minds in their mistaken zeal endeavor to control this sort of legislation.

THE "CHASE COMBINATION PLATE"

Many do not know just what this method is, and as it is really a valuable one I wish to call attention to it. Dr. Chase, of Vermont, several years ago devised a method of combining a *metal palate* with rubber covering the alveolar border. The method is a simple one, involving much less trouble in swaging than an all metal plate. The attachment of the rubber to the plate is unique, no loops, no holes, or necessity for soldering, and yet making the strongest attachment possible.

Its advantages are that it enables the patient, who cannot afford an all gold plate, to have at least a gold palate, which is a great advantage; at the same time it enables the dentist to secure better remuneration than for rubber plates. Another advantage is that in case of absorption the rubber can be replaced without altering the metal part. In fact the *temporary* set can be made in this way, and at the proper time the case be altered over. Then it is a very simple thing to do to swage just the palatal portion of a plate.

Dr. D. S. Billings, of Omaha, owns the patent and is now doing a veritable *missionary* work introducing this method as he goes from town to town and demonstrates to the dentist, who, perhaps, never made a die, how simple a thing it is, using as he does Babbitt metal and oiled sand. He has done another good think in putting on the market a splendid article of sand oiled and ready for use in two and three quart cans; also a fine Babbitt metal from my formula.

It is uufortunate that he cannot multiply himself a hundred times so as to spread all over the land and visit all dentists.—HASKELL, *Ohio Journal.*

SAFE CORROSIVE SUBLIMATE FORMULA.

That people should not drink it by mistake, the London Board of Health uses it as follows: One half ounce of corrosive sublimate, one ounce of hydrochloric acid, five grains of aniline blue, three gallons of water. As corrosive sublimate coagulates albumen, the acid is added to prevent that, and the blue water prevents it being mistaken for water. Otherwise,—Corrosive sublimate, 240 gr.; chlorhydric acid, 1 oz.; aniline blue, 5 gr.; water, 384 oz.; or in small quantities for dental purposes, (approximately) corrosive sublimate, 1½ gr.; chlorhydric acid, 1 drop; aniline blue to color; water, 1 oz.

KING OF COUNTERFEITERS.

McCartney was a highly educated man, not in book-lore but in mechanics. He made a thorough study of the principles of engraving and the application of science toward criminal ends. He was a fine dentist, a skilled chemist, an expert manufacturer of engravers' and dentists' tools, and possessed a knowledge of making the paper used by the government for bonds or money, that made him one of the most dangerous men.—EDITORIAL, *Post-Express.*

SELF MADE MEN.

Christopher Columbus was the son of a weaver and also a weaver himself. Claude Loraine was bred a pastry cook. Cervantes was a common soldier. Homer was the son of a farmer. Demosthenes was the son of a cutler. Oliver Cromwell was the son of a brewer. Howard was an apprentice to a grocer. Franklin was a journeyman printer and son of a tallow chandler and soap boiler. Daniel Defoe was a hosier and son of a butcher. Cardinal Wolsey was the son of a butcher. Lucian was the son of a maker of statuary. Virgil was the son of a porter. Horace was the son of a shopkeeper. Shakespeare was the son of a wool stapler. Milton was the son of a money scrivener. Pope was the son of a merchant. Robert Burns was the son of a plowman in Ayrshire.—*Exchange.*

Nothing, however, is said of the son of a gun.

CONDUCTORS' DEPARTMENT.

UNION MEETING NOTES.

The *Dental Cosmos* representative, Mr. Potter, did nobly in the preparation of this report. He drew largely on the credulity of his hearers when he urged this as his first attempt.

The machine engineered at the clinics by Dr. Low in obtunding sensitive dentine proved very effective. Dr. Barrett seemed to get equally good results with his nitrous-oxide outfit. The first "obtunded," the second "dessicated."

The papers showed great care in their preparation, both as to subject matter and treatment. The improvement in this respect over those of even a few years ago was quite marked.

The banquet was a success in every particular. Hon. John Van Voorhis responded to "The Bar." Hon. Chas. E. Fitch, the Press; Prof. J. H. Gilmore, the Clergy; Dr. W. H. Dayfoot, Medicine; Dr. Abbott (London, Ont.), the Canadian contingent, and Drs. Atkinson, Barrett, Darby, Straw and others for the ins and outs of the profession.

The exhibit of skulls by Messrs. Ward & Howell, of Rochester, illustrating dentition from such animals as the elephant and rhinoceros down to some of the smallest of fishes was the most remarkable of its kind in the history of dental societies. A bushel basket would hold the usual outfit; but here were over ninety of the finest specimens to be found in the country, so arranged as to show at a glance the progress of development from the lowest to highest of handlable animals having a dental apparatus. A vote of thanks was poor compensation for the use of the collection, the services of three or four men under the direction of Mr. Chichester, horses and wagons, but this was all that the firm could be prevailed upon to accept. We say it in all confidence, but this entire exhibit greatly amplified, will be seen farther east at an early date.

The Bausch & Lomb Optical Co. exhibited a number of microscopes of their manufacture, also numerous accessories, mounted specimens, etc.

The White Company, and Messrs. Davis and Archer of Rochester, placed a number of chairs, also instruments and apparatus generally at the disposal of the societies and their members.

OLD MICROSCOPE.

In looking over some old papers a short time ago we came across the following, handed us in '83 by the late Dr. Langworthy, of this city, son of the importer of the instrument in question. The instrument itself is now the property of a near relative in Rochester:

"Imported from London in 1811 to this country by the late Lyman B. Langworthy. It was probably one of the best instruments made at that time, 72 years ago, as it has three eyepieces and is used by transmitted light. The flea in one of the slides is a curiosity from the fact that it was placed there by Dr. Langworthy, of this city, on the banks of Lake Itaska, the sources of the Mississippi, 30 years ago. Was taken from a dog belonging to a scout."

THE SNOW METHOD.

How many who heard Dr. Snow discuss his new method of vulganizing, and saw his results, have tested the matter in practice? Very few, we take it, though no one doubted for a moment the soundness of the teaching. We have tested the method and found it effective. This is an application of knowledge that has a dollars and cents value, for which reason alone the practical should employ it.

For the benefit of those not familiar with the method through Dr. Snow's papers, we summarize as follows:

1. Flask as usual, cutting a channel, say a quarter or three-eighths of an inch from the mould, with gates leading from mould to channel.

2. Pack with rubber as usual, closing the flask perfectly and keeping it so until the rubber has finished its creeping (say five minutes).

3. Loosen the bolts until to rattle.

4. Place the flask in the vulcanizer, raise to the vulcanizing point and hold there not to exceed thirty minutes.

5. Shut off the heat, but do not let off the steam. This last would be ruinous to the contents of the loosely bolted flask.

6. When the guage indicates zero, open the vulcanizer, close the flask perfectly, return to the vulcanizer and finish the process of vulcanizing.

7. Result : Vulcanite in close apposition with teeth and model, and later no complaints on the part of the wearer of foul taste and odor.

A CASE OF "CLEAN GONE."

"Having gone through this stuff at least six times, translating, writing out, revise and triple proof reading, I am wholly incapacitated for further judgment of any of it, such central action as I have left being in a helpless photomicrographic German snarl. I expect to dream this night that I am a devitalized heliostat lying under the microscope stand, having drank too much $\frac{d}{y}$; or else a concavo-convex orthochromatic "abzichbar" high and dry plate pickled in picric acid to peel off the film."

Such was the sad story of our translator of "Photomicrography" when last heard from, to which let us add—"Zeiss be sprinkled," at least until he learns to write United States.

OUR TRANSLATOR EXPLAINS HER USE OF "D———."

It is, perhaps, always a good thing to learn the estimation in which one is held by one's neighbors, though it may not be flattering, especially where inferences are drawn as to keeping "one's shoes on the bureau," one's "bonnet under the bed," etc., etc., with the natural implication dependant upon such postulates ; but when it comes to a charge of using profane language, a wail of protest is certainly in order. I will overlook the open admission of a profane imagination on the part of the reader, his long professional familiarity with the rubber dam and other dreadful things being some excuse. Nevertheless the charge is very unjust. Strict candor compels the acknowledgment that the accused has sometimes, on rare and exigent occasions, been guilty of a small, inefficient and weakly feminine "darn," introduced as a glittering generality for the moment, entirely severed from its indigenous connection with real or suppositious hose in need of repairs; and it may be admitted, too, that the inclination to such rashly inconsiderate expression has been experienced in the dental chair. In the case in question, however, the meek and abused letter of the alphabet quoted, was innocent of any desire to stand as substitute for even a mild expletive, but was simply algebraically expressive of doubt divided by an unknown quantity—$\frac{d}{y}$—on the plan of the "Zeiss" quantitative formulae which caused us so much perplexity.

Plain justice requires the explanation that the habit of flinging those proof-sheets, on the floor, as at your house one evening, was contracted in consequence of most of the copy, etc,, coming from those printers being so soiled that it is not fit to be laid upon my desk or any other hearticle of furniture in my room, hence I always keep it on the floor while in my possession, resorting to immediate manual ablution after using. For my part I am not quick at those inferences, and even if I observe a person's hat and shirt cuffs decorating the center table, and his cigarette boxes upon the bookshelves, I do not always infer that he never puts anything in place ; neither, when walking down town behind him, I have an excellent opportunity to admire his great coat tastefully ornamented, as to the skirt, with a fortuitous arabesque of white cotton yarn, do I hastily draw the conclusion that he habitually hangs up said coat in his wife's work basket. So, now.

"THE BEST ON THE CONTINENT."

BY A GRADUATE OF ONE OF THE "FIVE DOLLAR" COLLEGES.

In the *Dominion Dental Journal* for January, under the head of "The College Dinner," referring to the annual of the Toronto School of Dentistry, the following may be found :

"Dr. J. B. Willmott was cheered to the echo. He spoke of the standing of dental and medical colleges in Canada, compared with those of the United States. Until recently, all that had been necessary for a medical or a dental student across the line to graduate, was to be able to sign your (*sic.*) name and produce a $5.00 bill. He was glad to know that such a condition of things did not exist in Canada. Our institutions were the best on the continent. Here it required thirty-six months of hard work in order to be admitted to practice, while in the United States, little more than half that time, with comparatively little work, was required to place a student in either the medical or dental professional ranks."

If Dr. Willmott is here correctly reported, he is a libeler and a falsifier. If he is not, these epithets belong to the reporter. Is it any wonder that there is a feeling in this country that Canadians are bad neighbors, and that the less we have to do with them the better, when such things as this are given official currency? And yet, when Americans put up the line fence and prepare to close the front door, the Canadians are so filled with conceit that they interpret it as an indication that we want to be yet more intimately associated, and to live in the same house with them.

Dr. Willmott is the head and essential body, including the fly-flapper at the other extremity, of an affair in Toronto bearing the grandiloquent title of "The Royal College of Dental Surgeons of Ontario." Which diploma is valued most in Canada—that of an American, or this Royal College of Toronto? Did the Canadian school ever matriculate an American student? Yet it is well known that but for the characteristic legislation in Canada, which discriminates against American diplomas, the Toronto affair would be compelled to close its doors instanter. As it is, more Canadians graduate in America than in Canada.

Dr. Willmott himself came to an American college for his diploma. Did he obtain it by "being able to sign your name and produce a $5.00 bill?" Does he speak from a personal experience? "The best on the continent." God help us! It is strange that the news has not spread beyond the confines of Canada's back woods. The world is apt to learn where the best schools are, and to patronize them. American dental colleges receive pupils from all the nations of the earth. Has the Toronto affair such prestige? Why will intelligent men make such asses of themselves?

If Dr. Willmott has such a contemptible opinion of American colleges, why did he, year after year, in the face of repeated refusals, importune the Association of American Dental College Faculties to admit him to their number, and why did he whine so pitifully because that body declined to recognize "The Royal College of Dental Surgeons of Ontario?"

The amount of it is, Dr. Willmott, and men of his kidney, shut themselves out from the avenues of professional information, hibernate in their holes, and hence are ignorant of what other men are and what they are doing. They never give themselves a chance for comparison with others, and so do not know their own littleness. It is possibly legitimate for Dr. Willmott to blow his own horn loudly, and to indulge in Canadian brag and bluster, but he should keep truth on his side, or he will find himself in a hopeless minority of one.

Because Canada is a small and weak neighbor, we in the United States have extenuated a great many things, and have submitted to many annoyances, but we begin to think that this complaisance is being misinterpreted and are becoming very, very tired indeed.

"HE INTENDS TO TAKE."

SIRS—I intend to take two dental journals the coming year, and would like to compare the contents and prices of several of them before subscribing. Will you please send me a sample copy of the Odontographic Journal, and let me know what inducements you hold out for subscribers next year.

This is an old dodge, by which the impecunious or avaricious dentist gets his reading matter for nothing. The only "inducement" we can offer this year is two dollars in cash, a pound of rubber, three ounces of amalgam, one tea chromo and a tin toot.

LINE(S) TO THE OCCUPANT OF THE GUEST CHAMBER.

The Bell invites me,—
Hear it not, My soul, for it is a knell
That summons thee to breakfast or to—well,
Hear "mine host" a chestnut tell.
MACBETH,—Act II. Scene I.

THE REASON OF IT.—She : "Dr. Blank, that 'imported enamel' you put in my tooth is all out."

He : "Possible ? What have you been doing with your teeth ?"

"Brushing them."

"What with ?"

"Brush."

"What kind ?"

"Bristle."

"That's it—brushed them out ; served you right ; should have used felt."

A NEW SOCIETY—THE "STOMATOLOGICAL."

On the evening of January 5th ten to fifteen members of the profession at Buffalo organized a society whose object is the study and examination of anything and everything of special interest in oral pathology, dental anatomy, and kindred scientific subjects. While professional matters are not to be wholly excluded, they are to be kept well in the background, and the time and energies of the society devoted to the subjects in question from a scientific standpoint. The meetings will be held the second Monday of each month, July, August and September excepted. The active membership of the new society must be resident at Buffalo, and in good standing in the local Society of Natural Sciences, with which the "Stomatological" will affiliate, and whose rooms, library, museum, etc., it will use.

The officers are: President, W. C. Barrett; Vice-President, A. P. Southwick; Secretary, H. A. Birdsall; Curator, W. B. Straight; advisory board, S. Eschelman, and two others to be elected at the next meeting. "Stomatitis with special reference to changes occuring in pyorrhea" is down for the first meeting following organization. The president will present the paper.

DENTAL PATRIARCHS.

The invitations are out for the long-talked-of banquet in honor of Drs. E. S. Tucker and C. J. Wetherbee, of Boston; W. B. Hurd and J. H. Burras, Long Island; A. D. Newell and J. Hayhurst, New Jersey; C. W. Spalding, Missouri; J. A. Robinson, Michigan; W. W. H. Thackston, Virginia; John B. Rich, Washington, D. C.; C. A. Kingsbury, Philadelphia; Augustus W. Brown, John Allen, S. A. Main, W. H. Dwinelle, W. H. Atkinson, New York, and L. S. Straw, Newburgh.

The opportunity of meeting so many of those identified with the early history of dentisty is unprecedented, and will prove of great interest, not only to those present, but to the profession generally, and especially to those who came upon the dental stage when the life work of these grand old men had been well nigh done.

Man that is married to woman is of many days and full of trouble. In the morning he draws his salary, and in the evening, behold, it is all gone; it goeth, but he knoweth not where. He spendeth his shekels in the purchase of fine linen, to cover the bosom of his family, yet he is seen at the gates of the city with but one suspender. He goeth forth as an ox or an ass, and draweth the chariot of his offspring. He rises, clad in the chilly garments of the night, and seeketh the somnambulent paregoric wherewith to heal the collicky bowels of his offspring. Yea, he is altogether wretched and full of misery. Wide is the road and broad the way that leadeth to the gates of matrimony, and many there be that go in thereat.—*Bicycling World.*

And straightway he kisseth the bride at least tooth times.

They are making excellent wool out of the fiber of the fir-tree by means of electricity. The time is now come when the lamb may as well lie down with the lion.—*Exchange.*

Every year a layer of the entire sea, fourteen feet thick, is taken up into the clouds. The winds bear their burden into the land and the water comes down in rain upon the fields, to flow back through rivers.—*Exchange.*

PELLETS.

Koch's lymph is already known as "Kochine."

One of the members said it was generally conceded that the primary function of teeth was the commutation of food.

"Mr. Blank, those are mighty fine teeth you have."
"That's what they told me at the store where I bought them."

Supplement your list of periodicals with the *Dental Mirror.* Its "Comparative Methods" alone is worth many times the subscription price.

The *Buffalo Medical and Surgical Journal* for December has a picture of Koch, said to be an excellent likeness and certainly a work of art.

"You're no good," said the Capsicum plaster.
"Well, I'm holier than thou, anyhow," retorted the Porous plaster.—*Life.*

Rochester men cannot become active members of the Buffalo Dental Association, the constitution fixing the limit just west of Powers' Block.

He: Don't *you* believe that all men are born equal?
She: Oh, yes, of course I do, but some men deteriorate after birth, you know.—*Life.*

Will somebody please write another paper on proximal surfaces? The territory is about the size of a pin head, but some mighty dentists are already in it to do or die.

In speaking of the trouble of a year ago that swept the whole civilized world, an exchange says it "was no new thing, for we read in the Bible that in Paul's time the Jews had Agrippa."

"The favorite prescription of a very successful physician was 'to be a little lazy.' This remedy ought to be used with judgment. He once recommended to a government official—" and his dentist.

Consul Gillman, at Jerusalem, says three American locomotives now run between that city and Joppa. First on the ground as usual. Some good Americans think this will be the case even at the resurrection.

We are in receipt of Dr. Bulkley's "Dangers arising from Syphilis," with the compliments of the New York Odontological Society. The paper has been widely copied, both at home and abroad, also translated.

"Wonderful, the force that atmospheric pressure can exert," mused St. Agedore, "the air of Annie Rooney will blow all the people out of a hall, and a baby's squall will lift its father clear out of bed."—*St. Joseph News.*

Western New York architects have adopted a scale providing for the division of the standard foot into tenths and hundredths instead of inches. The chiropodist will still continue to divide it into corns, bunions and such.—*Post Express.*

In a discussion of amalgam, one of the members asked : "If that is the case (the discoloration due to sulphide of silver), what object can Dr. Blank have in condemning it?" To which the matter-of-fact member responded : "Five dollars."

In reporting the Union meeting recently held in Rochester, a local paper credits Dr. Geo. B. Snow, of Buffalo, with a discussion of his "New method of packing and vulcanizing rubber, and of the theory of death by electricity as a means of capital punishment."

"Doctor," asked the business like patient, "what is your fee per visit?"

"Well, Sir," answered the equally business like doctor, "three dollars ; ten off in case the patient dies."

A rustic was boasting of a "big job" he had done in having a tooth taken out which had ached like "lightenin'."

"What did you have to do about it, so great, except to furnish the tooth," asked a bystander.

"Why, dummit, I hild the socket doown."

An invitation is received to be present at a meeting of the American Society of Civil Engineers, said meeting to be called to order at 20 o'clock. The invitation also informs us that "the library and conversation rooms are open each Wednesday evening, from 19½ to 22 o'clock." Since which we've put our watch *in hoc.*

NO TRANSACTIONS THIS YEAR.— Dr. VanWoert, Chairman, issued the following November 1, 1890: The Publication Committee of the Dental Society of the State of New York, deem it to the best interests of the Society to postpone publishing the Transactions for the year 1890. A full explanation of such action will be given in the Annual Report of the Committee, May, 1891.

"Decorating porcelain teeth" is a further development of one of the fine arts, and consists in gilding the enamel surface to represent gold-filled cavities. It is said to be effective, does not weaken the tooth, and undergoes no change in soldering or vulcanizing. The company owning the patent is prepared to do this work for the trade, and sell *shop* (what has become of the dental *parlor?*), city or county rights.

Anyone having in his collection of old journals any of the following, will do well by addressing Dr. S. A. Freeman, Buffalo, N.Y.: *Dental Quarterly*—Vol. V, No. 4, Dec., 1866. *American Journal Dental Science*, 3d Series—Vol. III, No. 8, Dec., 1869; Vol. XII, No. 10, Feb., 1879; Vol. XV, No. 4, Aug., 1881. *Southern Dental Journal*, Vol. III, No. 10, Nov., 1884; Vol. V, No. 2, March, 1886; No. 10, Nov., 1886; Vol. VI, No. 7, July, 1887.

There is a man in our town and he is wondrous wise; whene'er he writes the printer man he dotteth all his i's And when he's dotted all of them, with great *sang froid* and ease he punctuates each paragraph, and crosses all his t's. Upon one side alone he writes, and never rolls his leaves; and from the man of ink a smile, and mark "insert" receives. And when a question he doth ask (taught wisely he has been), he doth the goodly 2-cent stamp, for postage back, put in.—*Artist Printer.*

In getting out its call and programme for the annual meeting of '91, the Northern Ohio Dental Association has taken time by the very front of his forelock. The body will convene at Oberlin, May 12th. Papers are announced by Drs. Whitsler, Youngstown; Templeton, Pittsburg; Atkinson, New York; Dougherty, Canton. Clinics are credited to Drs. Dewey, Cleveland; Craeger, Fremont; and Siddell, Oberlin. This is doing well and early, and means a successful meeting in every particular.

Patient, who has had experience with the world, but in whom there has developed no guile: "Then, doctor, you never put in amalgam?"

Doctor: "No, sir; I take it out."

"But, suppose your fellow practitioners should do the same, what then?"

"In that case, it would pay me better to put it in."

"So I thought."

MILLER'S "MICRO-ORGANISMS."

We had intended to review this book *in extenso*, giving copious extracts; but even a cursory reading suggested such a course as worse than superfluous, for every man of the profession must needs have it at once, and to himself, and he is sure to cling to it until its every page has been devoured.

BOOKS, PAMPHLETS, ETC.

A new edition of Curtman's Chemical Lecture Notes, by Prof. Whelpley, of St. Louis, is announced.

PHYSICIANS' VISITING LIST, 1891. Philadelphia: P. Blackiston, Son & Co.

Probably the best thing of the kind in the market for physicians. Much of the condensed information in the front of the book could be made available by members of the dental profession.

THE BACTERIOLOGICAL WORLD is the name of a monthly announced for 1891, beginning with January. It will be published at Columbia, Mo., and edited by Dr. Paul Paquin, director of the bacteriological laboratory of the State University of Missouri. It is said that the editor has qualified in this subject by study at European laboratories, including Cornil and Ranvier's, and Pasteur's. Without doubt there is room for a periodical of this kind, but to succeed the standard must be high and monthly maintained.

TRANSACTIONS OF THE AMERICAN DENTAL ASSOCIATION. Thirteenth annual session, August, 1830. Chicago: H. D. Justi—The *Dental Review* Co. Pp. 209.

Our readers are familiar with the contents of this volume (or ought to be) though the October issue of *The Dental Review*, perhaps the bulkiest monthly number of a dental periodical ever presented the profession. The preparation and speedy putting out of a work of this character, reflects great credit on the publication committee, and the editor and proprietor of the periodical in question.

SCIENTIFIC AMERICAN, Architects and Builders' Edition. New York. Munn & Co.

Anyone who contemplates house building should lose no time in providing himself with this exceptionally fine periodical. In addition to building news and general instruction of interest to every reader, it contains illustrations, specifications, colored plates, etc., always suggestive, and in special cases quite exhaustive. It also has value as an exponent, graphic and otherwise, of art in modern house building and furnishing. At $2.50 per year, its cost is merely nominal.

THE DENTAL LABORATORY. By Theodore F. Chaupin, D. D. S. Philadelphia: Johnson & Lund. Pp. 120.

This little work is an excellent manual for the construction of gold and silver plates, crowns, regulating appliances, also for the manipulation of vulcanite and celluloid, by a very practical man, the editor of the *Dental Office and Laboratory*, in which much of the matter and many of the illustrations have appeared. It begins with the building of a work-table and takes the student by easy steps through varied processes that result in appliances both ornamental and useful to the wearer. It belongs to the "handy-volume" series.

PROGRESSIVE EXERCISES IN PRACTICAL CHEMISTRY. By Henry Leffman, M. D., and William Beam, A. M., Philadelphia: P. Blackiston, Son & Co., Pp. 104.

This little book outlines the method of laboratory instruction in inorganic chemistry as taught by the authors for several years past in the Woman's Medical College and in the Pennsylvania College of Dental Surgery. Much attention is given as a matter of course to details so essential in laboratory teaching, and these are details fixed in the mind by actual experiment by means of specially devised apparatus, much of it new, all of it simple and easily constructed.

THE MONIST. A quarterly magazine. Chicago: Open Court Publishing Company. Vol. I, No. 1. Pp. 160. $2.00 per annum.

The announcement says: "Our intention is not to restrict the pages of this magazine to the presentation of any one special view of the philosophical problems of the time. It is not proposed to make it a medium for our own special ideas. We wish to bring together the noblest aspirations and the highest ability of human thought." Further, its "columns will be open to every competent exposition of the results of philosophical inquiry." This number consists of contributions by Romanes, Binet, Cope, Mach, Carus, Dessoir, Salter and Arreat. Much space is also devoted to book reviews.

DENTAL PATHOLOGY AND DENTAL MEDICINE. By Geo. W. Warren, D. D. S. Philadelphia: P. Blackiston, Son & Co. Pp. 106.

This is another of the popular "quiz" compends, and in this particular instance by a dentist, the clinical chief of the Pennsylvania College of Dental Surgery. Like other books of its class, its occasional perusal not only keeps the rust off, but puts one in possession of a tolerably complete index of the subject treated. If used only as indices, their ownership many times more than compensates for the small outlay in cost. Of course, this one has special value for the dentist, dealing as it does with what most concerns him in daily practice.

STANDARD DICTIONARY OF THE ENGLISH LANGUAGE.

Funk & Wanalls, the Astor place publishers, are out with the announcement of the above work and sample pages of text and illustrations. Special attention is called to the plan of the work—the locating of the verifying quotations, the use of the scientific alphabet, the placing of the etymology after the definition, the placing of the current definition first, the disputed as well as the preferred definition, the giving of 50,000 vocabulary words more than are to be found in any other single volume dictionary extant, and the indication by the use of the upper and lower case initial letters, whether words are proper or common. The specimen pages suggest a great undertaking, but the house in question is easily competent to perform the task.

PROCEEDINGS OF THE ROCHESTER ACADEMY OF SCIENCE. Brochure 1, Vol. 1.

The Academy has published papers as having been read before it, but until the present has not been in financial condition to issue even a brochure in its own way and name. Under the able administration of its efficient president and chief executive officer, Prof. H. L. Fairchild, of the University of Rochester, it has grown to its present proportions and importance, and has not only a habitation at home, but is rapidly gaining a reputation abroad, as letters from learned bodies the world over asking for copies of the issue in question or requesting a place in the Academy's mailing list, amply testify. The principal paper appearing in full, with illustrations, in this issue bears the title, " The endemic of typhoid fever at Springwater, N. Y., by Geo. W. Rafter, C. E.," (an occasional contributor to the Odontographic Journal) and M. L. Mallory, M. D. The discussion of the subject is largely with reference to Rochester's water supply. As a specimen of the printer's art it stands without a rival among " Proceedings." John P. Smith, of this city, proprietor of one of the best plants in the country, got it out.

DESCRIPTIVE ANATOMY OF THE HUMAN TEETH. By G. V. Black, D. D. S. Philadelphia: The Wilmington Dental Manufacturing Co. Pp. 153.

The name of the author is a sufficient indication of the importance of the subject, likewise a guarantee of its thorough and skillful treatment. As its title suggests it deals with tooth anatomy from the descriptive standpoint, with only here and there hints as to the practical bearing of the anatomical points in operative procedure. Form in general is first considered, then formulae, characters common to all teeth, special features, surfaces, angles, cusps and elevations, depressions, lines of measurement with tables. The illustrations and descriptions of the pulp chamber, its outlines, divisions and sub-divisions are intensly interesting and of the utmost practical value to the practitioner. The work closes with arrangement of the teeth, their relations to each other individually and collectively, a discussion of the alveolar process and alveoli, the peridental membrane and the gums. The illustrations are by the author and drawn in all their details from the particular tooth in hand. The Willimgton company is rapidly making itself a name in the art of book-making, the style, illustrations, paper and binding being in keeping with the contents.

IRREGULARITIES OF THE TEETH AND THEIR TREATMENT. By Eugene S. Talbot, M. D., D. D. S. Second edition, revised and enlarged. Philadelphia: P. Blackiston Son & Co. Pp. 261.

In the preparation of the present edition the author has greatly added to its completness without materially altering the plan. Like everything of importance in dentistry, the subject has grown and to that extent as to make necessary to its completness the incorporation of the accumulations of the year, and thereby and in some slight degree the modification of less recent methods. Some of the chapters, or their substance, are familiar to readers of the *Dental Cosmos* of '88 and '89. Here they are given their proper place in relation to other phases of the subject. The historical sketch is new and serves to show conclusively that many "recent" theories regarding the causes of irregularities of the teeth are of quite ancient date. The treatment of the etiology of the subject seems to be complete, distinctions made clear and a classification given that will readily enable the student to refer the case under consideration to its proper place. The value of this last named feature only needs mention to be appreciated. General laws only are laid down for reducing irregularities, all such being subject to modification and experiment. Principles are simply, yet fully illustrated, leaving petty details to the ingenuity of the operator to apply to the particular case under treatment. The book is fully illustrated, one hundred and sixty-nine of the two hundred and thirty-four illustrations being original —an unusually large proportion. Of the publisher's part of the work it is simply repeating the stereotyped saying of "well done." A second edition so soon after the first is as creditable to the enterprise of the Messrs. Blackiston & Co., as it is complimentary to the author and his large audience.

THE

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CONDUCTED BY

J. EDW. LINE, D. D. S., M. D. S.

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THE
Odontographic Journal.

Volume XII.—*April, 1891.*—*No. 1.*

THE BANQUET IN HONOR OF THE PATRIARCHS.

The Banquet in honor of the veterans of the dental profession was conceived by Dr. Norman W. Kingsley. At a meeting of the Central Dental Association of Northern New Jersey, held October 20th, 1890, he suggested that a committee of three be appointed, who should co-operate with similar committees which might be named by other societies in arranging a banquet to the Dental Patriarchs. The proposition was unanimously adopted, and the committee selected.

Other Societies named their committs in the following order:

The Odontological Society of New York, October 21st; The Brooklyn Dental Society, October 27th; The Second District Society State of New York, Nov. 10; and The First District Society, State of New York, Nov. 11, 1890.

The committees from these five societies made a joint committee of fifteen, which met at 115 Madison Ave., N. Y. city, on the evening of Nov. 28th, and chose Dr. Kingsley, Chairman, Dr. Ottolengui, Secretary, and Dr. Northrop, Treasurer.

The object of the Banquet was to honor all those living, who were in practice about 1840, and the following invitation was sent to all in this country whose names were known to the Committee. The intention was not to omit any one entitled to an invitation by reason of age:

New York; Dec. 24th, 1890.

Doctor ———

Dear Sir:—The Societies named below desire to tender to you, and a few others in the dental profession, a complimentary banquet to which the younger generation can come, and show their appreciation of the long and faithful services of their distinguished elders. The banquet will be given at Clark's, No 22 West Twenty-third street, New York, on Saturday evening, January 31st, 1891, at 6 o'clock.

Committee of the Central Dental Association of Northern New Jersey :—Dr. F. A. Levy, Dr. C. A. Meeker, Dr. Geo. E. Adams.

Committee of the Odontological Society of New York :—Dr. N. W. Kingsley, Dr. S. G. Perry, Dr. H. G. Mirick.

Committee of the Brooklyn Dental Society :—Dr. Ottolengui, Dr. O. E. Hill, Dr. A. H. Brockway.

Committee of the First District Dental Society, State of New York :—Dr. A. L. Northrop, Dr. W. W. Walker, Dr. F. A. Remington.

Committee of the Second District Dental Society of the State of New York :—Dr. J. J. Pitts, Dr. Wm. Jarvie, Dr. W. A. Campbell.

An early reply is requested, addressed to,

NORMAN W. KINGSLEY,
115 Madison Avenue,
New York.

MENU.

Huîtres en coquilles *Sauterne*

POTAGE

Bisque de homard

HORS D'ŒUVRES

Olives Radis

POISSON

Bass, sauce piquante

Tomates Pommes persillades

RELEVÉ

Filet de bœuf, aux champignons *St. Julien*

Pommes croquettes

ENTREMETS

Petits pois á l'Anglaise

Haricots verts

ENTRÉE

Ris de veau á l'Italienne

PUNCH

Sorbet au kirsch

RÔTI

Cailles piques Salade de laitue *Champagne*

SUCRÉS

Glaces de fantaisies

Petits gâteaux Charlotte Chantilly

Bonbons et fruits glacés, en caisse

—

Café

LIST OF DINERS.

Frank Abbott.
R. R. Andrews,
Geo E. Adams,
C. L. Andrews,
Oscar Adelberg,
I C Abrams,
H. Albert.
Harvey D. Allen,
F. A. Brauneis,
F. L. Bassett,
Chas. B. Baker.
E. C. Baxter.
C. H. Beesley,
S. L. Benson,
J. Adams Bishop,
A. H. Brockway,
C. F. W. Bödecker,
C. A. Brackett,
W. G. A. Bonwill,
F. C. Barlow.
W. A. Campbell,
W. H. Colgrove,
J. W. Clowes,
M. Connor,
M. L. Chaim.
J. W. Canaday,
G. Q. Colton,
Wm. Carr,
C. F. Campbell,
J H. Downs,
W. S. Drummond,
E. T. Darby,
S. E. Davenport,
A. C. Davenport,
F. N. Dunn.
A. M. Dudley,
C. E. Duch,
A. R. Eaton,
H. Enos,
C. G. Essig,
Geo. Evans,
J. L. Fordham,
C. Jones,
C. R. Fletcher,
C. E. Francis,
J. N. Farrar,
L. Ashley Faught,
S. Freeman,
Jos. Fournier
Geo. A. Fournier,
J. P. Geran.
S. L. Goldsmith,
E. S. Gaylord,
C. W. F. Holbrook,
Chas. A. Hardy,
W. Hoag,
F. C. Harmstead,
John I Hart,
L. P. Haskell,
Dr. Hall,
O. E. Houghton,
P. L. Hull,
I. P. Hehl,
O. E. Hill.
J. F. Pell Hodson,
Harvey Iredell,
I. L. Isenberg.
C. S. Inglis,
William Jarvie,
Louis Jack,
V. H. Jackson,
N. W. Kingsley,
F. V. Ketcham,
L. C. Leroy,
J. Bond Littig,
Benj Lord,
W. T. Laroche,
Fred. A. Levy,
J. Edw. Line.
W. E. Linstedt,
B. F. Luckey,
C. A. Marvin,
Jas. McManus,
G. L. Mason,
E. V. Macleod,
G. E Mitchell,
Geo. A. Mills,
C. G. Merritt,
D. McQuillen,
H G. Mirick,
C. W. Meloney,
Thos. Moore,
S. H. McNaughton,
C. Merritt.
H. Newington,
Benj. C Nash,
H. B. Noble.
R. Ottolengui,
J. Allen Osmun,
Delos Palmer,
B. J. Perry,
W. Pinney,
H. A Parr,
John I. Pitts,
C. N. Peirce.
Eugene Palmer,
S. B. Price,
S. G. Perry,
J. G. Palmer,
T. A. Quinlan,
W. P Richards,
F. A. Roy.
T. S. Ryder,
F. A. Remington,
E. T. Rippier,
M. L. Rhein,
W. H. Rider,
Hyman Roosa,
A. P. Southwick,
R. M. Sanger,
C. S. Stockton,
A. R. Starr.
J. A Schmidt,
L. M. Slocum,
T. C. Stelwagen,
J. E. Serre,
D. N. Smith,
L. D. Shepard,
S G Stevens,
Dwight Smith,
Wm. I. Turner,
W. D. Tenison,
James Truman,
J. W. Taylor,
J. D. Thomas,
N. S. Towner,
W. H. Trueman,
Dudley Tenney,
T. I. Underhill,
F. T. Van Woert,
A. Westlake,
C. A. Woodward,
H. E. Westbay,
S. G. Wallace,
F. C. Walker,
G. W. Weld,
R S. Williams,
W. Woolsey,
W. A. Woodward,
W. W. Walker,
S. C. G. Watkins,

At nine o'clock, Dr. Kingsley (presiding) said : "Gentlemen will be kind enough to come to order. Those of you who are meandering up and down the aisles will please find your seats—if you can."

"When the United States Government discovered that those old monarchs of the forests, the big trees of California, were rapidly disappearing under the ravages of the destroyer, they placed a guard over them to keep them from further destruction, and to preserve them as long as possible. Nowhere else on the face of the earth can such relics of antiquity be found. Some of them that have recently been cut down were over six thousand years old, showing that they were planted before the world was created.

"When the management of this entertainment were looking over the dental profession they discovered that the ranks of the patriarchs were disappearing as rapidly, under the ravages of another kind of destroyer, as the big trees of California, and they thought it quite time to corral them and show them some attention before any more were carried away. In looking over this continent it was found that there were only about forty of them left. It will be interesting to you to know the names of those forty. We say forty, because that was all that the committee had been able to learn of up to the time this entertainment was planned. Within the last day or two, however, other names have come to our notice, who might possibly be entitled to the distinction as much as some who are here. These are the names to whom invitations were sent :

Declinations with letters of regret :

Doctor	Edward Maynard,	Washington, D. C.
"	Edwin J. Dunning,	Newton Center, Mass.
"	J. De Haven White,	Philadelphia.
"	Daniel Neall,	Philadelphia.
"	Edward Townsend,	Philadelphia
"	R. C. Mackall,	Maryland.
"	J Smith Dodge,	Morristown, N. J.
"	A. W. Kingsley,	New Jersey.—Florida.
"	J. F. Fowler,	New Jersey —Florida.
"	J. H. Farnsworth,	Detroit.
"	Corydon Palmer,	Warren, Ohio.
"	L. W. Bristol,	Lockport, N. Y.
"	E. D. Fuller,	Peekskill, N. Y.
"	B. W. Franklin,	Ithaca, N. Y.
"	W. A. Royce,	Middletown, N. Y.

The following accepted but were detained :

Doctor	Elisha G. Tucker,	Boston, Mass.
"	Ambrose Lawrence,	Boston, Mass.
"	R. Finley Hunt,	Washington D. C.
"	W. W. H. Thackston,	Virginia,
"	C. W. Spalding,	St. Louis—River Point, R. I.
"	Augustus W. Brown,	New York.

The following are present :

Doctor	John B. Rich,	Washington, D. C.
“	Jesse C. Green,	Philadelphia.
“	Spencer Roberts,	Philadelphia.
“	C. A. Kingsbury,	Philadelphia.
“	I. J. Wetherbee,	Boston.
“	T. H. Burras,	Long Island.
“	W. B. Hurd,	Long Island.
“	A. D. Newell,	New Jersey.
“	J. Hayhurst,	New Jersey.
“	Jere A. Robinson,	Michigan.
“	A. J. Volck,	Baltimore.
“	John Allen,	New York.
“	W. H. Atkinson,*	New York.
“	W. H. Dwinelle,	New York.
“	S. A. Main,	New York.
“	L. S. Straw,	New York.

“Out of the forty to whom we sent invitations, nearly one half are with us. We intended to include in this entertainment everyone who has been in practice over half a century. There are a few in Europe with the requisite antiquity, and we tried to import some expressly for this occasion, but we found a difficulty as we ran against the McKinley Bill (laughter). We tried first to bring them in as “contract laborers,” but the Government forbid it (laughter) ; then we suggested to the Custom House authorities that they could be classified as“ *bric a brac* ” (great laughter). We were disappointed. Then we told them that we were certainly entitled to bring them in as “fossil remains” (loud laughter) but they said they were too active for fossils. Then we said we would import them as “raw material,” but we were met with the objection that it would interfere with home production.

“The specimens that we have here to-night are all home made and hand sewed and warranted not to rip (great laughter), we will guarantee them equal to the best imported, and every one full measure, “best six-cord” and “200 yards on every spool.”

“We have secured for this occasion, and for one night only, the services of the most brilliant, eloquent and silver-tongued orator in our profession, to make an address of welcome to our honored guests, and when I say he is the most fluent and graceful speaker among us, it is not necessary for me to mention his name, you all know who I mean. He has had his silver tongue polished up expressly for this occasion, and I take pleasure in introducing him ; Dr. Marvin,” (continued applause).

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*Dr. William H. Atkinson died suddenly of pneumonia, in New York, April 2, 1891, aged 76 years.

DR. MARVIN :—

"*Mr. Chairman and Gentlemen :*—I have been invited by the committee having this entertainment in charge, to speak a few words of welcome to our guests, to you, fathers in dentistry, who in obedience to an invitation sent to you in the name of the various dental societies here represented, have left your homes in this city, in other cities, in various parts of the land and have journeyed to this place to partake of our hospitality, to allow as to take you by the hand, to hear your voices and to see how men look and act who have been in the practice of dentistry for half a century. For my part I think you look very well, and as far as your actions are concerned in respect to the exercises of the evening, I think no one can find any fault.

"It gives me double pleasure to perform this assigned duty. First, it gives me pleasure to comply with the request of the committee which is composed of gentlemen whom I highly esteem, and second, it gives me pleasure, because when I speak these words in the name of the committee, I am but voicing the sentiments of my own heart.

" But it is not the committee alone, nor the speaker alone that extends this welcome. Every gentleman who occupies a seat at this board, whether at the small tables at the court end, or at these which run parallel with the longitude of this dining hall, pledges you with uplifted glass, or silently acquiesces in both acts of courtesy ; whether he pronounces in emphatic tones his word of compliment or from his seat bends upon you a look of earnest greeting, every one has a share in this testimonial ; every one—as every other one—counts a full numeral in the sum of offered courtesy and offered welcome which it is my privilege to put into words (applause).

"We greet you as *men* of ripened years ; whose lives have been filled with useful and honorable service ; whose abilities, whose attainments, whose characters, whose matured judgments, have been a recognized power in the respective communities in which you have dwelt. As faithful men, worthy the respect of your fellow men, we bid you welcome here to-night. We greet you as *pioneers in our profession*, who entered it when it was not what it is to-day. When its literature was meagre and weak ; its history brief and unimportant ; when its code of ethics consisted of concealment of discovery and self advancement alone ; when its methods were few and crude, its materia medica limited and little understood ; when associations for the free interchange of views and experiences were unknown and every new practitioner had to fight his own way alone and unaided ;

when honorable recognition was well nigh an impossibility, and any success was gained only through severe and persistent struggle. *As veterans*, who have come down to us from those early days, bearing the scars of many a well fought battle during all the intervening years, we give you glad welcome.

"We greet you as *faithful students* as well as practitioners ; who have done your part in bringing up the profession of dentistry to the proud place which she occupies to-day ; who have not withheld the results of your study, the fruits of your experience, the products of your genius, but have freely contributed of them all for the general good ; for the widening of the influence and the elevation of the character of dental practice ; for the instruction of the neophyte and the confirmation of the expert ; as gentlemen who have encouraged and aided by voice and pen the establishment of a creditable professional literature ; who have urged and labored to secure a higher standard of education in those who seek admission to our ranks ; gentlemen who have not spent your whole lives selfishly looking upon your own things but also upon the things of others, not that you might acquire them, but that you might make them more valuable to their possessors ; as such, we welcome you here to-night.

"As earnest, hopeful dentists, who have been spared to see this glad day ; this better day than perhaps in your early life you dared expect, when the name of dentist no longer means a man of ignoble calling or inferior attainments ; when the profession is entered through honorable doors and by certified qualification ; when legal recognition, legal restrictions, legal protection proclaim the acknowledged standing of the profession to the world ; this day when there are found within the pale of our specialty many who can teach, who can write, who can speak intelligenlly, instructively ; this day when the titles "Doctor,', "Professor," meaning just what the words mean, and all they mean, are recognized as appropriately applied to, and appropriately worn by men within our ranks ; as earnest, practical dentists who have been spared to see such things about you, we congratulate you and bid you hearty welcome to our feast. (applause.)

"And now, may the sea of life flow smoothly beneath you yet for many years, dear friends, respected fathers ; and as you continue to dispense from your accumulated stores of experimental knowledge to those younger in the profession, to all in the profession, you shall enjoy, not only the satisfaction of having furnished some less experienced brother, the better, for his arduous calling, but the larger satisfaction of having contributed materially to the sum of dental acquirement and of having done your full share in giving honor, dignity and unquestioned character to the vocation which we are all pursuing. (Applause.)

"It may be a little late for me to invite you to partake with us of that which our ever competent dinner committee has so bountifully provided. You have already anticipated the invitation and availed yourselves of the privileges which a seat at this board confers upon its occupant. We are glad that you did not wait for personal solicitation.

"And now may good digestion follow after satisfied appetites, and while you remain with us here and when you leave this hall, please carry with you the assurance of our pleasure in entertaining you as guests and the equally well-grounded assurance that our best wishes shall follow you to your homes and on into the future days. (Applause.)

"Gentlemen, one and all, members of the profession for whom I have been speaking, let us rise to our feet and with full glasses, from full hearts, in full accord, pledge our guests in this sentiment :

"Pioneers in dentistry, we honor you for your faithfulness in the past, for your continued faithfulness in the present, and for the future we wish you all, peace, health and the blessings of a long life. All this is included when we say welcome to our assembly and to our feast." (All rose and drank to this sentiment with great heartiness.)

DR. KINGSLEY :

"Now that our guests have been so eloquently welcomed, I would like to say a few words to these venerable men ; to these ancient and honorable relics of bygone ages.

"Gentlemen, we have heard of you for so long a time that your origin is involved in mystery. (Laughter.) We know not from whence you came and we mix you up in our minds with the other mighty heroes and demigods of a dim and shadowy past. We have heard many and strange things about you. We have heard that you are the prehistoric man, the first fruits of the evolution, and that you assisted at the creation of the world. It is told of you that in the Eocene Age when the morning stars sang together, you were there and joined in the chorus, and it is believed that you are the identical men who planted those big trees in California more than six thousand years ago. We have heard of your Bachanalian revels in Arcadia, in the days before the flood, with nymphs and satyrs, with naiads and dryads and *wet*ads. It is said also that you tried to get into the Ark and couldn't, and then you went off and built a little Ark for yourselves and called yourselves an "Independent

Profession." (Laughter.) When the people in the Ark saw what speed you were making, they became envious and jealous and they made overtures to your little Ark to become their tug-boat and tow the old "International" Ark along. The records of your deeds have resounded through the ages, but there are many things that the historians have failed to record, and we should like to have some of the "incidents" of your office practice.

"But what we would like to know more than all things else is the secret of your perennial youth. You show none of the usual appearances of great antiquity. You are neither rusty nor rickety, you neither totter nor tremble, and you have all the vigor and vim of the youngest patriarch among us. At the extreme end of the room I see a venerable back number whose silvery hair and benign countenance have been my envy and admiration for so long a time that my memory reacheth not behind it. I have understood that he was one of those who got into the Ark and was thus preserved to tell the tale.

Gentlemen, let me introduce Dr. Hurd, of Brooklyn."

DR. HURD:

"One of the evidences of age, gentlemen, is loss of memory, and when Dr. Kingsley tells you that we tried to get into the Ark he shows loss of memory, for he was there himself. (Laughter.) Now, we were not made up of that dependent material, we always paddled our own canoe. (Laughter) We were of that self-reliant stripe that we always proposed to carry our own trunks. Dr. Kingsley has made just enough reference to the Ark to be unsatisfactory, and I think I ought, in defense of these, my fellow approximate octogenarians, to tell you the true story of the Ark. It is not necessary to deny that we were there, but as sure as we were there Dr. Kingsley was there. As we stood upon the bank looking at that great sea-monster, the Ark, I heard a terrific puffing and blowing, and looking over my shoulder I saw the Doctor with flushed face, distended nostrils and rapid strides making for the Ark. Just at that moment I heard the stentorian voice of old Noah, "Haul in that gang-plank!" (Prolonged laughter.) If you could have seen the face of our archaeologist Doctor, it would have enlisted your sympathies, as Noah stood upon the deck of that vessel looking down upon him, shaking his head and saying, "We can't take everything." (Prolonged laughter.) You ought to have seen Noah's look. He said "We can't take everything and our complement of animals is complete." Dr. Kingsley evidently thinks that I don't remember him. Why, gentlemen, he used to smile with Shem, Ham and Japhet, and as one of those boys had a cleft palate, you know what he was there for. (Laughter.) I have sometimes thought that the boys interceded after that with the father to get him into the Ark. If they did (for, gentlemen he was saved—there is no question about that, this is no ghost among us,) if they did, knowing his peculiar disposition, I venture my hat that he was the identical dove that flew from the window of the Ark and brought the olive branch. (Laughter and applause.)

"Now, I want to say one word personally to you, sir. (Addressing Dr. Kingsley.) If you ever undertake to come such a dodge as this again, you go and have your hair dyed and have that white moustache cut off, and stand up straight.

"Now, sir, with your permission, I would like to say a few words more to my fellow three-score-and-tenners. (Laughter.) How pleasant it is to meet once more and look into each other's faces, to hear each other's voices, and shake each other's hands as we approach the terminal of our usefulness. Brethren, time has changed us, and it is more apparent to others than to ourselves. But though we have been together but a little while, have we not all of us thought and felt the sentiment so beautifully expressed by Longfellow, "We cordially greet each other in the old familiar tone," and though we don't say it, we think, "How old and grey he has grown." Brethren, we used to meet often. We met when the fires of youth burned brightly. Though those fires have somewhat dimmed, I cannot and do not believe that you are willing to say that we are but smouldering embers. How pleasant it is to-night that we have so conducted ourselves through life that these, our younger brethren, have felt disposed to give us this delightful entertainment To-night we have been highly honored. We have had good things to eat. We have had good things said to us. Why, what could have been more delightful than the address of Dr. Marvin? The right man for the right place was selected when Dr. Marvin was chosen. How well and thoroughly he understood his subject, picturing as upon a canvas; and so life-like were his understandings of old age, that I almost thought, how applicable to himself it would all have been. (Laughter.) I almost thought how applicable to himself would have been the closing line of the dying girl's song, "I am almost there, mother." (Loud Laughter.) Gentlemen, we are so highly honored that I am afraid we shall forget the highest honor that has been paid to us. If you noticed the invitation that was sent to you to be present here to-night, you discovered that we were all made Elders. Well, it is a very respectable thing to be an elder. Only think how it sounds, "Elder Rich, Elder Burras." I was so elated when I saw that we were all made Elders that I asked one of my friends if he knew where the meeting was held at which we were made Elders. He said he didn't know, but he rather thought it was held at Deacon Kingsley's house. (Laughter.) Well, Deacon Kingsley is always doing good to somebody else, and now, my brethren, you know that hope deferred maketh the heart sick. He cannot stand this strain much longer, we must do something for him, and I vote that we get together and move that Deacon Kingsley has not only the qualifications but the credentials from old Time himself to be a full fledged Elder.

"Now, I would like to say a few words to the sprouting germs at the other end of the room. Extremes have certainly met to-night, the old and the young; the embryonic at one end of the table and the pioneers at the other, with the middle men or go-betweens uniting generation. Young men, I wish you all the good that can come from the profession which you have espoused. It is a profession that gives more tangible evidence of real benefit to the human race than any other. (Applause.) You can put your finger upon it every time. There is no speculation about it as to whether it was the good nursing, the calomel or the pellets that did the work. If we have a diseased tooth we do not send to Berlin for lymph for the reason that we do not know what else to do, but we go to work and fix it up as it should be. Young men, be happy, for the profession which you have espoused is a noble and great profession. Build all the castles you like, and we, the old men will reflect upon the past and be as happy as you are that the day's work is almost done. And what difference does it make whether it is done to-day or done to-morrow? Venerable men, like here and there a molar that has hung to its place, so we have adhered and are still in the race." (Loud and continued applause.)

Dr. Kingsley:

"Gentlemen, the committee have had but one serious regret in connection with this entertainment, and that came only to-day. We had every reason to believe that the oldest dentist on this continent would be with us this evening. All of the younger generation present know as a matter of history, and the older ones by experience, that fifty years and more ago one of the principal operations of the dentists was setting pivot teeth; and they used to cut these teeth out of ivory and other substances. We had expected this evening a gentleman who has been in the practice of dentistry for eighty-six years. His first operation in dentistry was cutting teeth, eighty-six years ago.

(Laughter.) He is the oldest dentist in this country, and in marvellously good health, and it is not only the regret of the management, but it will be of all of you that we are deprived of his presence this evening. I refer to Dr. Augustus Brown, who is over eighty-six years of age, and who accepted our invitation but now sends his regrets because his family are afraid to have him come out—it may be because they fear that the old gentleman would talk too long, and they have recently heard of the disastrous effect of long speeches.* However as we are deprived of the presence of Dr. Brown, we have with us the next oldest dentist in this country; he used to live in this city, but for a few years past he *burrows* on Long Island.

"Gentlemen, I want you to fill your glasses, rise, and drink to the health of Dr. Burras, the oldest dentist with us, and, with one or two exceptions, the oldest dentist living. Long may he be spared to us and when the dawn of the twentieth century shall shed its soft radiances upon him may it find him as he is now full of intellectual and physical vigor."

The toast was drunk with rounds of applause.

DR. BURRAS:

"*Mr. Chairman and Gentlemen*:—There is some mistake in this introduction. I am not the oldest dentist present—that distinguished honor belongs to my friend on my right, Dr. Hurd. I was never in the Ark and he admits that he was. Even if I had lived in that period I would not have been admitted after Dr. Hurd, as the only two of a kind that the Captain took in were male and female and I would have been barred out. The gentlemen around this table are called veterans, pioneers, patriarchs, but I think there is a mistake in that. I have christened them the Apostles, because they have lived from the *profits*. (Oh!) Now Mr. Chairman, if I had the eloquence of a Chauncey Depew, or even the inspiration of our friend, Atkinson, I might entertain you with the witticisms of the former, or the angelic utterances of the latter. But I am not equal to it. This gathering takes me back some sixty odd years, to my early days, when Greenwood, Woofendale, Parkhurst and a few others, were the pioneers of the profession. They have fought their last battle. We are spared and I rejoice in the opportunity of addressing you this evening. My connection with the profession commenced a great many years ago. I would like to relate to the younger members some of the trials and difficulties which we were obliged to go through at that time, but there are other gentlemen to speak, so I will punish you with only a very short history.

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*Secretary of the Treasury Windom had died suddenly two nights before at the close of a long after dinner speech.

"In November, 1827, I commenced the study of the Theory and Practice of Medicine under the pupilage of Benj. R. Kissam, M. D., and attended lectures in the College of Physicians and Surgeons in Barclay street for two successive seasons, during which time I also attended the clinics and operations at the New York Hospital, also at the Eye and Ear Infirmary under Drs. Delafield and J. Kearney Rodgers, with the intention of choosing a specialty in the practice of my profession as oculist and aurist, but concluded on mature reflection that as individuals had but two eyes and two ears, and as every well developed specimen of humanity ought to be possessed of thirty-two natural teeth and might ultimately require them to be replaced by artificial dentures, I therefore decided to chose my since much loved profession of dental surgery, and on consultation with an intimate friend and prominent dentist, D. C. Ambler, M. D., I concluded to enter his laboratory and be perfected in the arts and mysteries of dental mechanism and operations on the teeth. At that time dentistry was in its primitive condition and depended upon individual ingenuity as every improvement made by others was kept as secret as possible. We had to depend upon our preceptor for all and every invention it was possible for him to communicate. For artificial dentures I have frequently gone to the slaughter houses in the eastern part of this city for the purpose of procuring calves' teeth to mount upon hippopotamus base for use in general practice. Behold now what a change! At the present time the practice of dentistry has arrived at its "Acme," with dental colleges, preceptors and professors, and all the modern appliances for perfecting operations, with dental engines, anæsthetics, improved instruments, and dental depots where everything required for the pursuance of all operations can be procured. Alas, how different in the early days of my practice with an old fashioned turnkey and one or two pairs of forceps; and compelled to file up and temper our own excavators and occasionally our own plugging instruments, and use the only kind of gold then made for filling by Geo. Kearsing of Reade St. or the Royal Mineral Succedaneum by the celebrated Crawcour, of Parisian notoriety, (with "Tin Improvements,") condemned by Parmly and continued to be used for years by those who sided with and signed his protest against its use. On December 17, 1867, Dr. Whitney of Buffalo, Dr. Rogers of Utica, Dr. Westcott of Syracuse, Dr. Southwick and Dr. Snow, with a few others and myself, met at Utica for the purpose of petitioning the Legislature for an act regulating the practice of denistry, at which meeting I was appointed secretary. From that meeting an act to incorporate dental societies and regulate the practice of dentistry in this State, was passed April 17, 1868, under which law our famed District Societies now meet and operate with so much satisfaction and success.

On Long Island's sea-girt shore
I've now retired to while away,
And listen to the breakers roar
And hear what the wild waves have to say.
As they break upon the beach
Quite within our very reach,
Let us "spray."

"I congratulate the gentlemen who have inaugurated this banquet. They have reflected great credit upon themselves and honor upon us, and I am very much obliged to you all for your kind courtesy and attention."

DR. KINGSLEY :

"This telegram has just been placed in my hands, dated,

To Dr. N. W. Kingsley: Chicago,
"CLARKS," 22 West 23rd St. Jan. 31, 1891, 9 P. M.

Please present to the remnants of the Old Guard, that surrenders but never dies, our compliments and regrets that we cannot be with them at the banquet, but the distance is great and the walking is not good.

We are a committee appointed to secure relics of ancient dentistry and fossil remains for the World's fair. If they survive this dinner we extend a cordial invitation to come to a bigger show in Chicago in 1893.

P. S. Don't read this until the majority are under the table.

COMMITTEE ON ANTIQUES.

"As Dr. Burras has barred himself out as the oldest man among us, Dr. John B. Rich is our "Patriarch." We shall be pleased to hear from him.

DR. RICH :

Mr. President and Gentlemen:—The invitation which called me here this evening was intended to do honor to the "pioneers" in our profession. Among those who sit around this board there is no one who is entitled to the distinctive name of "pioneer." I have often wished that there could be some movement inaugurated to appropriately do honor to those men who were the actual pioneers. How much we owe them! We know nothing about it. I find, sir, in all dental meetings, that the names of those men who were most prominent in elevating our profession, who gave their time, their knowledge, and everything that they possessed to the forwarding of these interests, are entirely forgotton ; and I am ashamed to say that it is so. You must remember, gentlemem, that fifty years ago was a very important period in our history. Previous to that time there had been no important communication between dentists ; there was no dental literature ; there were no dental associations ; there had been no organized dental education. But far back of that time—thirty years before that time—there had been men who had striven with a great amount of energy and anxiety to elevate our vocation and make it worthy of being called a profession. Fifty years ago, sir, the majority of dentists in this city of New York were little better than scoundrels and charlatans. Among the seventy or eighty members at that time, there were perhaps thirty who were earnest, honest and intelligent. These men were the pioneers—not we who sit round this table. Eleazer Parmly, fifty years ago had been already twenty-five years in practice, and during all that time he had striven with all his energies for the elevation of his profession. Dr. Horace H. Hayden, of Baltimore, a name we have almost forgotton, was the man to whom we owe the first association among dentists ever started in the world. I shall never forget a visit I made to him in 1837, in Baltimore, carrying letters of introduction to him and to Dr. Harris, and seeing those two men, seventy years in age and forty years in practice, show more enthusiasm for their profession than any of us here to-night. Dr. Hayden gave his time and talked and wrote incessantly. He went from city to city to induce dentists to come together and interchange their opinions for the benefit of each other. In Boston he had but little encouragement, they said "Yes, we desire the elevation of our profession, but we think it will be better accomplished by individual effort," but when he got to New York he found men who would come right up. Now, gentlemen, fifty years may appear a long time to you, but it is not so very long to us old fellows. It seems to me but yesterday when fifteen earnest men assembled in this city to organize an association of dentists. Only fifteen—ten of them may have belonged to the city of New York, and five were from other cities—principally from Baltimore.

"When that society was organized we had thirty men who might be considered respectable, out of seventy-five ; the rest were robbers and charlatans, who, if you asked them for any information would say, "Well, if I tell you that I shall charge you $500." They would not open their mouths or their instrument cases, unless you paid them a very heavy fee. That was the condition of our profession fifty years ago. Now, gentlemen we rarely say anything about these men ; and that man who was so instrumental in bringing about this result—in our being here together to-night—who ever hears of his name—who ever hears of the name of Horace H. Hayden—the first President of the first dental society, the "American Society of Dental Surgeons." In 1839 the first journal of dental science that was ever published was issued in the city of New York, and for want of patronage it was not till 1842 that there was another issue. Then Harris and Parmly and Elihu Baker, of this city, organized the Baltimore College of Dental Surgery. Oh, that these men could look upon this assembly to-night; oh, that they could look on these intelligent faces that any profession on the face of the earth might be proud of. How delighted would that old man, Horace H. Hayden, have been at seventy years of age to see this assembly. I was ashamed to say I was a dentist when I began practice fifty-four years ago; it was a matter of obloquy to be a dentist. To be sure there were some who had made their mark and were respected professionally, but not socially. You never heard of a dentist being socially entertained. To-day, we are not only honored as dentists, but we are cordially welcomed within the hospital doors of grateful humanity the world over. In closing I wish to add my congratulations for the great success of this interesting occasion and my sincere thanks for personal attentions."

DR. KINGSLEY:

"Let me call the attention of those who knew Dr. Westcott in his lifetime, to the fact that I have a letter here from his brother-in-law, Dr. Nash, who expected to be with us this evening, and has been deprived of that pleasure to him, and to us, by the death of his sister, who was the wife of our old friend, Dr. Westcott. He is gone, and now his widow follows him. From among the many regrets which I have received I will read but a few, for want of time. The first is from Dr. J. Smith Dodge:

5 Morris Avenue, Morristown, N. J.

DR. N. W. KINGSLEY:

Esteemed Friend:—Thanks, many thanks, for your kind invitation to your Banquet, but my years and health forbid my accepting it. If I live until next August I shall be 85; have had two shocks of paralysis and am waiting for the third to call me home. May each and all live as long and then I will meet you at the great Banquet in our Father's house.

Truly and respectfully to *all* of you as brothers,

J. SMITH DODGE.

Washington, Jan. 1, 1891.

DEAR DR. KINGSLEY:

The invitation to the Complimentary Banquet and your kind note of sympathy were received and appreciated. Say, to my old friends in the profession, how deeply I regret that ill health will not permit me to meet them. To the younger generation, that the honor and respect shown in publicly acknowledging by this Banquet, their great esteem for the good record of their elders is most gratifying. I am now too broken down, by years of close study and faithful work for the welfare of my patients, to say much ; but tell them that I leave the profession as a sacred trust to all. Never let it be said that the honest work of those distinguished elders whom they now honor, lasted longer or gave the patient more comfort than the work of the present time with all that experience of the past which we leave them and that knowledge which the future will bring. God bless and help you to live the truer life that we may all meet in that higher existence promised to the faithful.

Sincerely Yours,
EDWARD MAYNARD.

DR. RICH :

"I am sorry to be obliged to add a little postscript to that letter. Dr. Edward Maynard yesterday was dying. I paid a visit to him where he was lying on his back, unable to speak, and slowly wasting away—my old companion and brother in my profession. He is lying there powerless, speechless and dying, and the dictator of that letter has not spoken a word for two days."

Newton Centre, Mass., Jan. 15th, 1891.

DR. NORMAN W. KINGSLEY :

Dear Sir :—Your favor of the 25th ultimo. is received, in which you invite me to be the guest of the New York Odontological Society, the Brooklyn Dental Society, and others, at a Complimentary Banquet on the evening of the the 31st of January, 1891. Permit me to express through you to those whom you represent, my deep sense of honor conferred by their invitation, and my regret that circumstances beyond my control prevent my personal participation in the proposed festivity. I shall, however, rejoice to be with you in spirit, and to feel anew the generous glow of those early reunions of our Guild which the present occasion cannot fail to vividly recall to the minds and hearts of your honored guests. Nor can I desire for this occasion a more brilliant success or more worthy service than to rekindle in the breasts of the young and old those generous fires that we felt when from places far and near, the youths of that time came to listen to the words of wisdom, to be inspired and instructed by the discourse of the fathers of American Dentistry ; of Hayden and Parmly, of Townsend, Maynard, Harris and Tucker, and others of equal eminence, who were then, and will be long remembered as the pride of our profession.

Surely there can be no better outcome of this meeting than the renewal of that spirit of youth, of that kindly and beneficent emulation in the service of humanity which has rendered dental practice in this 19th century so fertile in resource and has given it such rapid growth in the power to minister to the health, comfort, beauty and refinement of civilized life. Let us hope that the same spirit of ever-renewed youth, fed by the same generous enthusiasm, may characterize our profession in the 20th century.

With cordial greetings and best wishes to my old friends, I am

Fraternally Yours,

E. J. DUNNING.

River Point, R. I., Jan. 19, 1891.

MY DEAR DOCTOR KINGSLEY :

Your kind invitation to be present at your approaching Banquet was duly received and fully appreciated. I had set my heart upon attending this meeting and of casting my mite in the treasury of wisdom that will be contributed by the assembled patriarchs, but Providence, for some inscrutable reason, orders it otherwise. It will be difficult for you to realize how deeply I am disappointed that I am unable to be present at one of those gatherings whose attractions I have long wished to enjoy in person, but have heretofore felt compelled to deny myself the pleasure, but the world is full of disappointments and I suppose each of us must try to be content to accept his share. My physical infirmity still confines me to my room with no prospect of an early release. I beg you to assure this gathering of the Ancients that I am with them in thought and desire, although I am prevented from being present in person.

Faithfully and Fraternally Yours,

C. W. SPALDING.

The following letter is from the only surviving member of the first graduating class of the first dental college—The Baltimore College of Dental Surgery :

DR. NORMAN W. KINGSLEY, Elkton, Md , Dec. 30, 1890.
115 Madison Ave.

My Dear Doctor :—Upon reaching home to day from Asheville, N. C., I found your very cordial and flattering invitation awaiting attention. I regret to write that I may not anticipate the pleasure of being at the Veteran's Banquet, as I am too old and too valuable a specimen of fossil remains to promise an appearance on the stage of life, north of Maryland, in January. Much as I would like to be with you and your *confreres* and with thanks for your kindly remembrance, I am, Very Truly Yours,

R. C. MACKALL, M. D.

To the Executive Committee of the Central Dental Association of Northern New Jersey, and others :

What can a *young man* do after the flattering compliments and urgent solicitation to be one of your symposium of dentists at the complimentary dinner to be tendered to the pioneers ? Nothing could meet my wishes more than to participate in your social conclave and meet comrades both old and young, believing as I do that no profession having *science* for its foundation can properly be established without the effort of associated minds, and without constant study and comparison with each other's experience. These results have a proud record in the history of our profession.

As strongly as I am inclined to be with you, and although it would be my greatest pleasure to mingle with you fraternally, yet I fear that age and frost will prevent my earnest desire. Good wishes for each and all will be my constant thought; having played the *instruments* 57 years, I still listen daily to their scraping and musical tones. I am Yours Truly,

ELISHA G. TUCKER,
92 Charles St.

Boston, Jan. 19, 1891.

DR. KINGSLEY:

In the absence of Dr. Tucker, I will call on a Junior Patriarch, who is ably qualified to speak for him—Dr. L. D. Shepard, of Boston.

DR. SHEPARD:

"*Mr. Chairman and Gentlemen:*—I consider it an especial honor that I am called upon on this occasion to respond for my friend, Dr. Elisha G. Tucker, Boston. It is my fortune, as it is that of many other practitioners of dentistry in Boston and neighborhood, to belong to that large class which professionally can claim to be the descendants of the progenitors whom we honor—Drs. Harwood and the Tuckers. Over sixty years ago Dr. Daniel Harwood settled in Boston. He was a graduate in medicine, and he at once took high stand not only as a practitioner of dentistry, but as an educated man, who was received in all circles as such. We may, in accordance with the erection of a family tree, presume that there was a dental tree, and on its trunk—if there were such—were inscribed the name of Daniel Harwood, M. D. About the year 1830, sixty years ago, we find that tree bifurcating, and there are two branches, one bearing the name of Daniel Harwood, M. D., and the other Joshua Tucker, M. D. As that tree grew, a few years later, in 1834, we find branching again taking place, and our friend Elisha G. Tucker becomes a student in the office, soon a graduate in medicine, and associated in practice with his brother, Joshua Tucker. We also find at the same date, 1834, another student, who has been, I am sorry to say, forgotten here, Dr. Bacon, of Portland, then a student, graduate in medicine, who, during these fifty-seven years has maintained the same standard of high character and excellent practice and of reputation as has been maintained by the gentlemen in Massachusetts and other States. Again bifuracation takes place, and, others too numerous to mention, have become branches of this tree, which now spreads so that its shade covers an immense territory, and there are thirty or forty practitioners of eminence and responsibility, who took their primary nourishment from this same source. Gentlemen, there was one characteristic of Daniel Harwood, of Joshua Tucker, of Elisha Tucker, and of all the rest, which entitles them to take high rank among us in honor, and that is, that every regular student who entered their offices, was required upon entering to promise that he would graduate as a doctor in medicine. My friend, Elisha G. Tucker, in response to a letter which I sent to him a few days ago, prompted by a letter from our chairman, sent me the following. I wrote to ask him if there was any reason other than his age and the season, why he should not be with us this evening, and he responded :

Dear Dr. Shepard :—Excuse my not answering your kind note, but will explain when next we meet. My throat is too sensitive to be trifled with at my age in mid-winter, which is my only excuse. I am,

Truly Yours,

ELISHA G. TUCKER.

"Any gentleman, who will see that handwriting, with the firm and clear cut characters, will say that it is a marvel of preservation for a man in the 83rd year of his age. I claim for my friend, Dr. Tucker, this distinction, that while for the past twenty years he has declined to receive youthful patients, preferring with wisdom that they should pass into the hands of younger men, he has to-day, in the 83rd year of his age, a *clientele*, which is respectable and numerous ; and that in his daily use of the Excavator and Plugger, his hand is as firm, his touch as sure and his operations as excellent, with the unimpaired eyesight as it was twenty or thirty years ago. As he cannot be present, although perfectly well and perfectly sound, but, as he said to me, his friend : "We are dying so frequently from pneumonia and kindred diseases, that I don't dare to risk the journey to New York at this season of the year." I suggest that our chairman be instructed to send to the veteran, Elisha G. Tucker, a telegram of gratulations and good wishes from the two hundred dentists dining together in New York, who regret his absence." (Applause.)

DR. KINGSLEY :

"Nearly twenty of our veterans, our pioneers, our patriarchs, our honored guests, or by whatever name you choose to distinguish them, are here this evening. We would like to hear from everyone of them, but we can easily see how impossible it would be, without prolonging the exercises to an unusual hour. However, we shall be very glad to listen to as many as possible, if they kindly take into consideration that there are others whom we would like to hear. I will call on Dr. Kingsbury, of Philadelphia."

DR. KINGSBURY :

"Were I possessed of the talents of Edward Bellamy, and did the time permit, I would certainly indulge on this occasion in "looking backward." There are times, I think, when all of us find ourselves in a thoughtful, reflective mood, going over the past and realizing the interesting and striking events incident to our lives. There is one prime event in each one's life which he can never ignore. The fact of one's birth. To be born into this world is the great starting point of all that follows. All the great possibilities of the future, the attainment of knowledge, the art of thinking, the art of skillful working, the art of doing good. It implies influence, heroic deeds, the praise of mankind, well deserved honor and a rich reward. Another event I would refer to is the present occasion. I am glad I was born. I am glad I live. I am glad I live in the present and participate in the festivities of this grand occasion. I know not to whose conception this unprecedented and unrivalled banquet is due, or whose master hand gave it shape. It seems to me that only some tasteful genius with generous promptings could have achieved such magnificent results. In "looking backward" to the early years of my professional career I am reminded of certain associations and incidents that exerted a strong influence in leading me into the ranks of the dental profession. At that time my cousin, Horace Wells, who subsequently discovered anæsthesia, was practicing dentistry in the city of Hartford and was taking a prominent position for a young practitioner. The first artificial teeth that I ever saw were in the mouth of a relative and were inserted by Horace Wells. My attention was especially called to them at the time, and the operation, consisting of porcelain, crowns, superior central incisors, grafted on the roots with wood pivots, was considered a marvellous triumph of dental art. I listened with especial interest to a description of the manner in which the operation had been performed, and to the words of satisfaction and praise expressed by the patient. This and some other dental operations that I witnessed about that time made a strong impression on my mind. I was then teaching school in my native town of Windsor, Ct. In the adjacent town of old Windsor resided a numerous family by the name of Hayden. With them my own family sustained relations of friendly intercourse and in this way I frequently heard the name of Horace H. Hayden mentioned as a successful practitioner of dentistry in Baltimore. In the spring of 1838, I visited Trenton, New Jersey, for the purpose of teaching another year before entering college. Among the first acquaintances I formed in that city was the late Dr. Nathaniel Bunn, one of the only two dentists in the city at that time. The associations growing out of this acquaintance in addition to those to which I have referred, connected with Horace Wells and Horace H. Hayden, culminated in my decision to study dentistry. Guided by the influences of such examples I became a student in dentistry with Dr. Bunn. My vocation as a teacher gave me ample time for study, but the number of text books on dental science and practice at that period was very limited. S. S. Fitch's System of Dental Surgery, the work of Thomas Bell on the Anatomy, Physiology and Diseases of the Teeth, and "James Snell's Practical Guide to Operations on the Teeth," constituted the sum total of a dental library. My opportunities for practice were rather meagre compared with those of the dental student of the present day. It was during this first year of my dental experience that I conceived the idea of using the electric current as a therapeutic agent to relieve Odontalgia, constructing the electrical apparatus with my own hands. I would charge a Leyden jar with the electric fluid and pass the current directly through the aching tooth, giving it a shock that in most cases completely allayed the pain, and caused the patient to return to his home rejoicing. It was an original idea of my own, and so far as I know this was the first instance in which this subtle agent was applied to mitigate pain in dental practice. I was led to make the experiment through my fondness for natural philosophy and the special interest I took in electrical science. At the close of my first year's study with Dr. Bunn in 1839, I found that in my further preparation for dental practice it would be necessary for me to obtain practical instruction in working gold, constructing artificial dentures, and some other points in regard to which I felt the need of more light. But such was the status of the profession at that time that it was a difficult undertaking to find a position in the office or laboratory of a dentist with an established practice. The fee for instruction, charged by dentists of high reputation, was most exorbitant, in some instances five hundred or a thousand dollars even. In addition to this there was a narrow minded selfishness and mean jealousy characterizing most of those in the dental profession which served as great obstacles and discouragements to those wishing to enter it. After repeated efforts and failures I finally succeeded in obtaining a position with a gentleman who had a large practice in mechanical dentistry, and who had the reputation of great success. In the spring of 1841, I opened an office in Bordentown, New Jersey, where I practiced until the ensuing fall, when, upon the death of Dr. S. W. Evans, a dentist of rising reputation who had established a good practice, I was induced to remove to Philadelphia and take his office.

Before taking my seat I must congratulate my fellow practitioners, old and young, one and all, for the benign Providence that has been over us in all the years past and that has brought us in health, prosperity and happiness, to share in the social greetings and festivities of this auspicious and unprecedented occasion. I am sure that I voice the sentiment of every heart present when I say that we have cause to thank God and take courage. Indeed, with this flow of good cheer and exuberance of fraternal fellowship, I am really apprehensive that there is danger of resolving ourselves into a mutual admiration society. In harmony with this thought, an incident of some thirty years ago comes to mind. It so happened that I had for patients the wife and daughter of a distinguished professor of the University of Penna. It seemed from their statements that they had some time previously fallen into bad hands and had suffered from unskillful operations, exorbitant charges and discourteous treatment, which had greatly imperiled the reputation of all other dentists in their estimation. Their cases required numerous visits and important operations. When they made their last visit to me and had paid their bill with expressions of grateful appreciation, the old lady remarked, "It has been said that an honest man is the noblest work of God, but I think that an *honest dentist* is nobler still."

DR. KINGSLEY:

We were entertained a few minutes ago by the Junior Patriarch of Boston with an eloquent and richly merited tribute to the Senior Patriarch of Boston, but that is not all there is of Boston. We have one here this evening whose stature towers above them all and whose dignity and venerable looks well befit the ideal Boston Patriarch, Doctor Wetherbee.

DR. WETHERBEE:

Mr. President and Gentlemen:—Old and young, I would not care to walk in the footsteps of my esteemed pedagogue, Dr. Kingsbury, on account of the limited time which we have, but I would like to take a birdseye view of Then and Now; the vast variegated experience of all the past, the reminiscence, the aggregated effort, the personal application of men of stern qualities for the advancement of the dental profession, until in fact, we have arrived at a very important period, an exceeding great elevation, from which I have reason to believe that some have descended to the arena of "Dantes Inferno," copper amalgam. We shall have time, probably, for repentance of all our misdeeds and failures. I counsel you, young men, to be faithful to your own convictions of personal duty and responsibility to your patients; and in the second place to the profession. To the gentlemen who sent me the invitation to this meeting, I would say that I have enjoyed the occasion exceedingly; I am full of delight with the scintillations of your tongue. I am very glad to be with you; to be one of the so-styled elders, many of whom I have known for a great many years, and whom I hope still to know for many years to come. Long live those who bear the marks of years and have worn their garments well buttoned up, and whose hearts have cherished these principles which have made other men ambitious to arrive at a point that shall give them character and success. Long, my brothers, may you live and have the health still with you to do some more good in this world of ours. (Applause.)

DR. KINGSLEY:

I am going to call on one whose name alone stands as a synonym for the highest attainable perfection in our profession, Dr. Wm. H. Dwinelle.

DR. DWINELLE:

"*Gentlemen:*—I endorse every speech that has been made to-night. I endorse Dr. Kingsley as chairman, I think he is the best one in our profession. I particularly endorse Dr. Marvin's magnificent speech of welcome; how comprehensive it was; he left nothing unsaid and he did not make it fulsome by saying too much. And my worthy colleague, Dr. Hurd, acquitted himself with such honor as to merit our warmest praise. He has shown the rare faculty of making a very joyous occasion out of one that might easily have become a very solemn and dull one. I desire especially to thank Dr. Rich, my companion, whom I have known well on towards fifty years; it was noble and grand in him when he felt that the past—the true patriarchs—were being forgotten; the true progenitors of our profession, those who stood at the helm, shoulder to shoulder through trials more severe than have ever beset their successors. I particularly thank him that he made prominent before us Dr. Hayden, the true pioneer, in comparison with whom all that have succeeded him have been but failures. Let us honor his memory at all times Gentlemen, you know what my speech would be if I had time, in brief it is an endorsement of all. I endorse all that have been made to night, and all that would have been made if there had been time. And so, in closing, gentlemen, I will give you my benediction—the benediction that springs spontaneous from every heart to-night: God bless you all and God bless our profession." (Applause.)

DR. KINGSLEY:

"Is there any dentist in the wide world to-day who has not heard of Dr. John Allen? If so let him hang his head in shame for his ignorance. Nearly every one of his colleagues at the beginning of his career has been called home."

Dr. Allen:

"*Gentlemen:*—As the older members of our profession, here assembled, were to be the recipients of the honors bestowed on this occasion, and being perhaps one of the oldest present, I will make a few remarks with reference to *then* and *now*. Then we had not the facilities for acquiring a good dental education that we now have. Then we had no dental colleges in our country. Now we have them established in all our larger cities, and well supplied with competent professors to instruct their pupils in all the different branches of dental service. Then we had no monthly or quarterly dental journals; now we have them plentifully, and highly embellished with all that pertains to dental literature. Then we had no dental associations for diffusing professional knowledge. Now we have many of them, which prove a valuable source of popular favor and elevation in our profession. Now with all these facilities we can look forward with fond anticipation to the time when a still higher standard of perfection than we now have can be attained."

Dr. Kingsley:

"The proverb says that "it is the last straw that breaks the camel's back." The hour is approaching when we must break up this entertainment, and we will now add the last Straw."

Dr. Straw:

"*Mr. Chairman and Gentlemen:*—Those of us who sit here to-night joyfully accepting the genial hospitality of the younger members of our profession are representatives of times that witnessed almost the beginnings of dentistry in this country. We are here the last of a generation, the last link in the chain that serves to connect the past with the present. Time has stolen some beauty from form and features, but it has not robbed us of any intellectual endowments, which might prevent a full appreciation of the golden thoughts which have called us young and old together. The conception was of a pure gold, precious and refined, and the respect shown to white hairs bespeaks a veneration which we cannot fail to recognize, and which will go far towards making smooth the path of our declining years. The human is apt to dwell upon the long ago, but to-night we have the past and the present so happily brought into close communion that the line between those days and these is seemingly obliterated, and we meet not only as parents and children, but bringing us as brothers to one parental profession, blinding the memories of our youth with the bright sunshine of to-day. I cannot avoid the proclamation that this occasion is magnificent and glorious to those of us who are looked upon as marking a semi-centennial epoch in our profession. The ordinary limit of life to many of us is already here, but I feel justified in hoping that four score years and ten is the aliotted time to those who are proudly occupying seats as guests, and that they may even then not find their strength all labor and sorrow. When we consider how imperceptibly but surely that entity, Neurasthenia, creeps into a dental operating room and hovers around the chair, it would seem reckless to expect to find sixteen sexto or octo-genarians who have survived the ordeal and after fifty years of nerve decimation are here to-night to tell the story. It must mean that we have been handed down through a long line of ancestral beatitudes before whose shrine there was no smoke or drink, who lived on in the even tenor of their ways, slept well by night, and did not run the midnight by gas illumination, and through such benign influences engrafted these virtues upon the minds of their children. And so you see us to-night, hale and hearty, and ready to inculcate the gospel of correct habits upon the hearts of our dear young friends. May they live long and prosper, and ere long, in due time, meet us on the other side, bringing with them a bright record, leaving behind footprints that others may see and follow. May they find in the example of these sixteen older brothers a sufficient stimulus to walk on the road of duty as citizens of a great commonwealth, and enough of dentistry as a profession. Then and then only can they hope for an invitation to such a grand reunion as they have provided for us to-night." (Long continued applause.)

The Banquet closed with singing "Auld Lang Syne."

The following letters with others were received by the Committee:

109 St. Botolph Street,
DR. NORMAN W. KINGSLEY: Boston, Jan. 30, 1891.

Dear Sir:—Notwithstanding that I notified you of my inability to attend the Complimentary Banquet to-morrow evening, my intention has been up to half an hour ago to take the cars and be with you. A miserable lumbago, or toothache in my back, came as an unwelcome guest about a week ago, and rendered it literally impossible for me to undertake the journey. I regret missing the opportunity to tell the gentlemen of the profession, who will exhibit commendable skill in *filling* at you festive board, a few things relative to my initiation into a profession *now* both learned and useful. In the year 1838, my honored preceptor, resident in Georgia, with one other zealous student and myself, each mounted on a prancing steed, started on an "operating trip" to the lower part of the state mentioned, the preceptor to get the money, his pupils the knowledge. We halted at two or three places on the route to rest our weary limbs and feed our beasts on corn fodder 'ere we reached that part of the world where we supposed, or rather where our preceptor supposed, the recipients of our "operations" would never take the trouble to go far to adjust any difference of opinion as to value of our services and compensation therefor. At the hotels where we halted on our way, lectures were extemporized by the Professor mainly on the antrum Highmorianum, of which he knew about as much as his class. The Professor, like most of those following in his illustrious path, was a garrulous gentleman who with wordy ingenuity endeavored to prevent us from finding out how little he knew of what he advanced. He would talk until he grew tired, and go to bed, and then talk to his class who nodded an assent to all he said, so that he was proud of us. At this time I can realize how that man felt, how relieved, for I have since been a professor in the Boston Dental College for a few years, but am not at present, (fortunately for the students who might listen to me, out of courtesy) connected with any dental school. The peregrinating college under consideration finally reached a spot in the "piney woods," Americus I think the place was called, where "Dr. ———, Surgeon Dentist, would remain a short time to attend to operations on the teeth." This information was printed in detail on little circulars about the size of a page of an ordinary newspaper and distributed by the class. The gifted tutor unrolled about a wheel-barrow load of dental instruments (not tools) embracing about five or six dozen elegant pearl handled scalers and pluggers and also half dozen pairs of forceps totally unfit for use in these degenerate times. The gold foil, Kearsings No. 6, ornamented the centre of the table and the awe stricken crowd in the bar-rroom had a "free show." But where were the patients? After many polite invitations, and some witty sayings to keep things agreeable, a few of the by-standers had the courage to submit to the needless operation of having their teeth cleaned for the first time in their lives. A cavity in a tooth would be discovered; it could be filled with gold for only three dollars and would last to all eternity. At last one man who was being "fixed-up" to be married made arrangements to have his mouth put in "dog-gone" good condition. I got no sleep the night before I was to see the first tooth filled, but I was amply repaid for the loss of sleep. The patient came promptly, took a chair, his head resting on Dr.———knee held in position by resting the foot on another chair behind the patient. There were several aproximal cavities, in the upper incisors and after a thorough preparation requiring nearly twenty minutes time (Dr ———was a rapid operator) the cavities were ready for the gold. Permit me to state right here that the fillings were, when finished, contour *plus.* The tutor stated to his patient that he had a couple of gentlemen from the north as pupils and solicited the privilege of allowing them to see him insert the fillings. Granted, and the class clustered. The book of gold-foil was opened and a sheet of it was thrown upon the coals of a wood fire and allowed to heat through. It was then cut into three or four strips and twisted into ropes, then *poked* into the cavities in the gentlest manner. The theory as I then understood it in approximal cavities was to always allow the filling in one tooth to touch a filling in the opposite or neighboring one, or against an adjoining tooth *to prevent the filling from coming out.* That was a method of contour filling, the art of which is unfortunately either entirely lost or confined to a few operators who can boast of filling fifty teeth in a day. On one occasion after a man had had several teeth filled and was going to the door to depart, two of the fillings dropped out. I remember distinctly how that man swore, but I do not care to write the language. The Doctor had at least one quality to commend him, a knowledge of *sapo molis*, and the teeth were immediately refilled and to guard against another similar failure the work was warranted. Warranted work never fails. The dental college and circulating infirmary remained at Americus nearly two weeks and I was graduated with distinction. Now came the trial. I understood all about Mr. Highmore's antrum and thought anybody could fill teeth. On taking leave of my beloved tutor he gave me his hand and parting advice. The burden of his advice was to fill all the molars but if there were any front teeth to be attended to, to advise the unfortunate patient to postpone having them attended to until Dr. ———should arrive in a few weeks. This piece of advice, though unselfish enough failed to please me much. I reasoned that after a ten days pupilage under *such* an instructor I must be either a fool or an ass, which I have not to this day been able to satisfactorily determine. I mounted my Rosenante and traveled on ; stopped at the first county seat I came to ; tacked a written slip on the door of the hotel announcing the arrival of Dr. Lawrence from the North and waited shivering over the fire for coming events. Events came, events went, for although I had reached the mature age of twenty-two, I told rather too big a lie when I told the incredulous brutes that I had been in practice ten years ; was traveling South for my health &c. It was a failure, appearances were against me, for I looked much younger than I was, and as to my health, well the ill-mannered events laughed in my face. However, I staid two weeks, my engagements elsewhere being urgent. The landlord became interested in me more and more every day of my remaining with him, Some few patients came to the rescue and were rewarded for their temerity by having some of the finest contour-plus fillings inserted in *and about* their teeth ever dreamed of by those who were fortunate enough to come under my care. After visiting several places, entirely forgetting my tutors advice and pocketing a few dollars, I took the road to my then home. In leaving the place where I operated there was no idling on the way. I rode fast, looking back from time to time to be sure that some ungrateful wretch was not in pursuit with pistol and bowie knife to adjust some fancied failure of stipulations understood or implied in regard to my *operations* on his teeth. Plate work was not at that time taught in our circulating college, but pivot teeth looking like pieces of broken crockery, Stockton's old clay body variety were occasionally put in the mouths of patients for the moderate charge of ten dollars each, and such teeth were worth ten dollars for they actually cost twelve cents each. A profit of nine dollars and eighty-eight cents cannot be regarded as excessive. I never went out operating the second time, nor have I visited, nor do I intend to visit, that part of our country until all who lived there at that time have been furnished with wings, and have flown to where "the wicked cease from troubling, &c." Like other birds of flight I went North to resume my practice that I had lied so much about, and have remained in or near my present abode ever since. But I cannot write my entire experience, nor tell you how I became a great light in the profession; how I first suggested the use of the steam-guage in vulcanizing; how I experimented until my "Old Reliable" amalgam was brought forward to rejoice the earth, and how the profession drove me to its manufacture instead of further "operating" &c. Modesty forbids me to suggest how I came to relinguish the particular style of contour fillings already referred to, but justice requires me to admit that I was not slow to notice and copy to some extent fillings by some such men as Harwood, Tucker, and my friend Wetherbee whose fillings were a credit to him. These are and were Boston men. I used to see fillings when they stayed in long enough to reach my part of the world, made by some Philadelphia and New York men, among whom our Atkinson is numbered. There are a number of things which have passed along the panorama of experience but please excuse me from writing any more, as well as for what I have already written. Yours truly,

AMBROSE LAWRENCE.

Ithaca, Jan. 28th, 1891.

DR. N. W. KINGSLEY:

Dear Sir:—Your kind invitation to be a guest at a banquet to be given in honor of the veterans of the dental profession was duly received. And while it is impossible for me to be present on that occasion, mainly on account of my health, I most heartily rejoice that the profession in its advanced position should stop to remember the small beginnings from which has sprung an honorable profession second to none in its usefulness to mankind. I went *into dentistry* in the spring of 1836 or rather I *took it up*. I had never seen a tooth filled nor one inserted. I *traveled* and like most of those calling themselves dentists at that time went one route and came back by a different one. This showed latent ingenuity, a characteristic so abundantly developed in our profession in after times. At the time I am speaking of the only book on dentistry was Fitch's Dental Surgery of which the more one studied the less he knew. We had no dental periodicals and of course no dental colleges. I remember the first partial gold plate of teeth *I worked up*. I bent the plate into shape with plyers and soldered the teeth to the plate in the focalized blaze of two tallow candles with a clay smoking pipe, assisted by the chamber-maid at the hotel where I was stopping. A dentist had been over the ground a short time before I came along, and judging from a specimen of his work, I think we ought to have formed a co-partnership, which work consisted in mounting four inferior natural front teeth, the points of which cut off so the ends of the roots rested on the gum, the teeth coming up to line with the standing teeth; a small hole was drilled laterally through the center of each tooth, a gold wire passed through the teeth and the ends of the wire twisted around each inferior eye tooth. By this arrangement, when the point of the tongue struck below the centre of the fixture, the cutting edges of the teeth pitched into the mouth and when hitting above the center they all pitched outward, and thus the flats and sharps of expression was secured. In looking back some fifty-five years and comparing the status of dentistry at that time with the truly exalted position it now occupies, I feel as Rip Van Winkle must have felt after his long sleep, unable to realize or appreciate the wonderful changes in the methods of practice and the results. Improvements follow each other in such rapid succession that theory and practice to-day becomes obsolete and abandoned to-morrow, giving place to others still in the advance. I have thought there may be danger of going too fast, though my fears may result from ignorance of physiological or pathological conditions and the tendency in abnormal states of system to relieve itself of the foreign substances by processes more or less familiar to us all. But the progressive spirit actuating the leading minds will doubtless ultimately master all difficulties and bequeath to coming generations the knowledge requisite to retain the teeth for usefulness through life. Many who started in the alluring practice of dentistry at or about the time I did, have passed away but if any still survive and have the good fortune to attend the banquet please remember me to them, and to all those who have so kindly aided in presenting their appreciation of the early efforts of those who struggled to acquire knowledge under difficulties. Please accept my heart felt thanks for the invitation to attend the contemplated banquet, an occasion that would give me great pleasure if unyielding circumstances did not prevent. I am very truly &c,

B. W. FRANKLIN.

Farmville, Virginia, January 20th, 1891.

TO DR. NORMAN W. KINGSLEY, CHAIRMAN OF EXECUTIVE COMMITTEE, AND OTHERS.

Honored Confreres and Fellow Craftsmen :—I beg to acknowledge the receipt of your kind invitation to a "banquet" to be given in honor of the surviving "pioneers and veterans of American dentistry," and to express my appreciation of the honor conferred, and also, the keen disappointment and regret which I realize from an enforced deprivation of personal intercourse on that occasion. I assure the distinguished gentlemen who have conceived such a testimonial of respect that I find no words with which to give adequate expression to my estimate of the compliment they have so generously paid in asking me to be one of their guests. I am just now recovering from a severe bronchial trouble, and am obliged to observe every precaution against relapse, and to visit New York at this season would be imprudent. I congratulate the battle scarred "pioneers and veterans" who will be present upon the good Providence, the vitality, will-power and courage, that has so long preserved and kept them in alignment with the progress and advances of the present era. Many, very many of our old comrades, some of our most gallant and illustrious cotemporaries and leaders, have fallen in the forefront with "lance in rest and harness on," they have "crossed over the river," and now,

> On fame's eternal camping ground,
> Their silent tents are spread.

To what a galaxy, to what a constellation, could we point your mental vision, what an array could we picture, marshalled and moved by "Harris and Hayden," by "Hudson and Gardette," by "Parmly and Solymon Brown," by "Tucker and Flagg," by Taylor and Hale," by "McCabe and Wayt," and a host of worthies whose roll-call would again quicken our energies and give inspiration to the work of to-day. You of the veteran's corps have been spared, not clad in your old, faded and tattered uniforms, not bearing your battered armor, but robed in vestments of "purple and fine linen," garnished with ribbons, medals and decorations. Verily, your "lines have fallen upon a pleasant time and place," and I congratulate you upon having fought the war, to almost complete if not crowning victory. Now fellow veterans what are still our duties and obligations to the profession we have served so long? Shall we abate our interest or relax our efforts? Shall we withdraw ourselves from association and cooperation in the activities that distinguish the present era of dentistry as a science? We have passed the meridian of life, our foot-prints now trend to its twilights and shadows, but the veteran has his place and his work, and that place is in the "ranks." There is a function for which the veteran dentist may be regarded as especially qualified, and which he may assume without impropriety, and that is a supervision, and the exercise of a conservative influence in the many *new* and startling departures in the theory, material, and practice of the present progressive and bewildering epoch. While new relations and discoveries of real value are to be recognized and sustained by all, it is patent that a wise and judicious censorship should be applied to the "thousand and one" *novelties* that are daily heralded, eagerly caught up, generally adopted, and after the test of trial, as generally remitted to partial or complete abandonment. Who better than the veteran to "keep watch and ward," to fly the "danger signal" or turn on the "air brakes?" Fellow pioneers and veterans, we will not retire from the field, we will hold our position in the "line," will do our work and "keep up with the procession." We will aid, support, and encourage our trained and stalwart *confreres*, in all their labors and efforts to advance dental science, and to make our practice in largest measure, a benefaction to humanity and a crowning honor to ourselves.

With every good wish for the success of the "Banquet;" for the health and happiness of the entertainers and the entertained; the generous hosts, and their honored guests, I beg to remain faithfully and fraternally their co-worker and fellow Craftsman.

W. W. H. THACKSTON.

Philadelphia, Jan. 30, 1891.

My Dear Dr. Walker:—Duties which I find I cannot delegate to any one else will keep me from your delightful gathering to-morrow evening. I am especially sorry for this because most, or indeed all, of those in whose honor you assemble are personally known to me, and many of them are warm and almost life long professional friends—friends whose towering thought and generous hearts and souls, have been to me like the shadows of the over reaching limbs of the great oak. They have shielded me from scorching rays and firey shafts when I was weary and worn, and in their professional zeal they have inspired me with strength when I should without such encouragement have fallen behind in the race. Long may the names of Atkinson, Allen, Dwinelle and Thackston, and their *confreres*, live and be cherished by their successors, who have a smoother road to travel and less asperities to antagonize by virtue of their lives and life work. With my hearty support to you and your committee and good wishes for your guests,

I am sincerely yours,
C. N. PEIRCE.

ROCHESTER DENTAL SOCIETY.

[Reported for the ODONTOGRAPHIC JOURNAL.]

The regular monthly meetings for the year began with that of October, which was held with Dr. Line. The paper of the evening "Meddlesome Dentistry," (see page 191 of January number) was read and discussed, after which members partook the customary "cold bite" and indulged in a "social smoke." Later, Dr. Arnold read a translation from the Russian, and Prof. Richard Hübner favored those present with selections on the violin.

The November meeting fell to Dr. Frank French who read the stated paper of the evening. It was presented in the form of notes, remarks, drawings, models and appliances. Following is an abstract of

ORTHONDOTIA :

The fact that the American people have worse teeth than any other nation is an important factor in the production from those people of the best of dentists. It is also true that we have the greatest number and worst types of irregularity to contend with. This is undoubtedly due to the mixing of nationalities. In Europe, Asia and Africa, the nations are and remain distinct, but their representatives come to this country, and by marriage become in a short time so intermixed, that they lose their individuality and become distinctively American. What is the result of this? The Scandinavian races of the north, with their slim features, narrow jaws, and correspondingly narrow teeth, intermarry with the Teutonic races of the south, with their broad features, broad jaws, and stocky teeth. Their offspring have the narrow jaw of one parent and the large teeth of the other, or vice versa, and the second generation reproduce this in such startling and infinite varieties as to tax the skill and patience of the dentist to the utmost. That the mixing of nationalities is an important factor in the production of irregularities is shown by the fact that extensive examination of the skulls of nations which have kept themselves distinct, as the Chinese and Japanese, show very little if any irregularity.

The first important thing in attempting to correct an irregularity is to study the face of the patient from two points—first, note the effect upon the features produced by the irregularity, and second, the change which will take place when the irregularity is corrected. Dr. Westcott used to say, "When cases of irregularity come to you, the best thing you can do is to send them to some one else—if you can. If not, get your models, study them carefully, and decide upon the best course to pursue. Do not tell your patient how you intend to proceed, for the chances are you will change your plan many times; then decide upon a very liberal basis what would be a good sum for such an operation, then double that amount ; in the end you will always find you have lost money."

I think you will all agree with me that Dr. Westcott was right. His estimates were based upon what he thought due his own skill and hard work, and also the good done the patient. I believe he received the highest fee ever paid for correcting an irregularity, but it is safe to say that his estimates were not based upon the profits to be derived from making plates at five dollars each, which is the liberal basis some practitioners figure on.

One of the main things to be taken into consideration is the direction in which the teeth have to be moved, and another, at what age it is most desirable to operate. My own idea is, except in those trifling cases where a very little attention will remedy it, that it is best to wait until the twelfth-year molars present ; when nature is working in your favor instead of against you. Our best chances of success seem to be between twelve and eighteen years of age. True, many cases are on record after twenty-five, but they are chiefly valuable in showing what nature will sometimes do, rather than what it is best she should be asked to do. In moving the teeth by whatever method the dentist may decide upon, it must be remembered that we have to look to absorption as our first lieutenant, and we must be careful not to crowd too fast ; for then inflamation will follow, absorption will cease, and more or less pain supervene. When possible, all movement should be in the line of least resistence. (Here charts were referred to and the lines in question fully discussed.) Again, when possible, all pressure should be at right angles in moving roots of teeth as well as crowns.

In the course of the discussion which followed, Dr. Cowan related an unfortunate experience with a case of V irregularity of the superior central incisors. He had reduced the irregularity perfectly and applied a removable retaining plate, but during the long summer vacation common to American schools, the little "cuss" took it into his (it may have been her, our reporter failing to catch the sex) head to wear the plate in his pocket. The natural result was a complete return to original sin, with much suppressed profanity on the part of the operator. His advice based on this experience was to do nothing for such patients, or apply the retaining fixture so that professional skill would be required to displace it.

Dr. Hert disagreed with the essayist on at least one point. He didn't believe that Americans had poorer teeth than other people, a conclusion that he based on Prof. Darby's lectures at the University of Pennsylvania.

Dr. Hofheinz used the Patrick system as a rule and found it exceedingly efficient.

Dr. LaSalle didn't make the correction of irregularities much of a feature of his practice. He couldn't get what he thought such work should bring an intelligent and skilled operator, therefore expended his energies in other and more profitable directions.

Dr. Watson (Canandaigua) described a case of suppression of one of the superior canines in which he intended to make the necessary space and fill it with a tooth attached to a crown or shell over the first bicuspid.

Dr. Requa objected to rapid movement on account of the forcing out of the teeth—they were actually thrown out of the alveoli pending absorption. He related the case of a lad, one of whose superior incisors stood within the lower. The mother said she could not or would not make the necessary outlay—she would reduce the irregularities herself, "so there." This pleased the speaker ; nevertheless, four months later she presented the boy with his tooth in its proper place in the arch. She had pried it into place with a piece of whalebone.

Dr. Saunders asked the essayist when he would begin to operate in a case of protruding superior incisors, before or after the eruption of the bicuspids, to which the essayist replied, "After." He also described the apparent correction of irregularity in a superior lateral that stood within the line. He had fitted a platinum cap to the crown of the lateral, faced the cap with a porcelain tooth, stiffening the whole with fine solder. So far as one could judge by the eye, the lateral was in its proper place.

Dr. Hofheinz told of Dr. Bütner's father, a dentist of Bremen, correcting all irregularities by means of the forceps. He removed the teeth, replacing them in the desired positions, or twisted them into place without removal.

Mention was made of a lady for whom Dr. Morrison (St. Louis) had removed a superior first bicuspid, also a canine ("tusk") of the same side, throwing away the former and implanting the canine in its place. The result, as seen by local talent, was spoken of in the highest terms.

Dr. Saunders, under the head of "Incidents," related the extraction of a lower molar by means of a cow-horn forcep, and the rare accident of throwing out of the mouth the adjoining bicuspid, even before he had completed the pressure necessary to start from its socket the offending molar. Before letting the patient close the mouth he had slipped the bicuspid back to place, and now, six months or more since the accident, the tooth showed no signs of ever having been disturbed. Even the patient is not aware of the fact of dissociation.

Dr. Requa had once been cautioned by a patient to "be sure to extract the right tooth." He assured her, with some show of feeling, that he had never extracted the "wrong" one, and yet within three days of each other, and shortly after the visit of the patient in question, he had extracted, as the small boy would say, "two at a lick." So much, said the speaker, for "boasting".

Dr. Hert, also Dr. Hofheinz, had "boasted," and with the usual result.

Dr. French had a patient with pulpless central incisors—destroyed by a fall. When he first began treatment they were very much off color. The treatment and results to date were tersely put—opened. bleached, filled ; at the end of three weeks they appeared as if nothing had ever been done in their behalf. Removed fillings, bleached, refilled ; later the original discolor again presented. Just one year later, unfilled, bleached, filled, and now the same result. He quoted the lamented Tweed, "What were they going to do about it ?"

As this was not a meeting of the State board, and members were not bidding for a diploma, they replied not.

The usual "social smoke" and good cheer followed the special business, after which the Society adjourned until the second Tuesday in December.

On this date the meeting was with Dr. Miller, who presented a brief paper (here in abstract) on

ORAL CHEMISTRY.

Having been asked by one of our members, a few days since, my subject for this evening, with but little thought I announced it to be "Oral chemistry," thinking I might be able to say a little on the subject; but on getting at it I found I was somewhat in the predicament of the dentist whose patient opened his mouth to such an extent that he requested him, in his alarm, to close it, as he intended standing on the outside. So I find my subject so large and comprehensive, I might say inexhaustible, that I can only remain outside of it, touching a few salient points with which you are all probably entirely familiar.

Chemistry in general may be said to involve the universe and all that constitutes it. The beginning of life, its continuance, and the final taking off, all more or less involve chemical operations. In much of this, as in all science, paradoxical as it may appear, we are all agnostics. For example, an atom of hydrogen is the basis of all atomic weight, but what is its weight, or whether it exists at all we do not know; and so with the other chemical elements, as oxygen, whose atomic weight is said to be eight, or carbon six, or nitrogen fourteen, and so on, which simply means that they so many times heavier than hydrogen, or in other words, these elements are so many times heavier than some imaginary thing of which we have no conception, and yet these arbitrary numbers are indispensable in all chemical analyses.

All matter is supposed to consist of atoms, and to be originally charged with positive or negative electricity. All chemical change seems to be accompanied by it, in some of its manifestations, and all electrical phenomena are accompanied by chemical activity. I believe it is generally held by scientists that the different forces in nature, such as light, heat, electricity, etc., are but different forms of the same substance. All force in nature is indestructible, and in its co-relation to other force is definite and constant in its proportions. Those are called chemical elements that unite with other elements in certain fixed and unvarying proportions or their multiples.

The mouth, for its comparatively limited dimensions, may be considered as perhaps the most complete chemical laboratory in nature. In supplying the necessary nutriment to the human frame, in consequence of the constant waste, the first chemical operation is undergone in the mouth when the food comes in contact with its fluids; the mechanical trituration of the food by the teeth causes, as we all know, an increased flow of saliva from the several glands. Saliva is not entirely constant in its properties, as I think was satisfactorily proved by Dr. Sternberg in some of his experiments, in which he found by injecting his own saliva into small animals he produced quite speedy death, but with the same test with the saliva of many others, no injurious results followed.

Saliva, among other elements that I need not mention, contains given quantities of ptyalin, which, though very small, is very very active in its effects, converting starch into sugar ; in effecting this chemical change it undergoes no alteration in itself. It is albuminous in its nature, though differing somewhat from other forms of albumen; the mucous doubtless adds to the digestive efficiency of the saliva. Salivary calculus, with the analyses of which you are all familiar, is deposited on the teeth and elsewhere, especially in adults, by reason of over-supply. The teeth of those in the habit of chewing tobacco are, as a rule, less liable to decay than others. Whether this arises from the fact of its exciting the salivary glands to greater activity, or whether it acts as a partial germicide, or both, is a question.

It would be impossible for me to mention the innumerable elements that enter the mouth, many of which have an immediate or remote effect upon the teeth ; some of these are among the most destructive of substances, which may be set free by means of some of the acids, having great affinity for all organic material, whether vegetable or animal, breaking up and forming a new matter. The different acids, either in a gaseous or liquid state, taken into the mouth directly, or eliminated through some chemical change in the mouth, such as fermentation or decompositson, produce very destructive results under favorable conditions. Alkalis may be very injurious.

I have already stated, in a paper read to this Society some years since, that in my opinion, the preservative nature of amalgam on the teeth lies in the fact of the metals being acted upon by oxygenated chlorine in consequence of their great affinity for them generating a practical and efficient germicide. And here, in passing, I would suggest that possibly the destructive agency of the germ lies, not so much in the germ itself as it does in the excreta of the same.

In my opinion, much of the destruction of modern teeth lies in the fact of their not being put to the use for which they were intended. All our food is prepared in a manner that requires the least amount of actual use for the teeth, and if the butcher inflicts upon us a piece of tough beef steak, how great is our wailing. The injunction of our Saviour concerning the barren fig tree, is an exemplification of nature in general, organic as well as inorganic. A thing disused becomes useless.

In the use of some of our filling materials, are we not producing systemic difficulties that are very injurious? Our phosphate of zinc may have a very deleterious effect, in some cases, by having the phosphoric acid set free through some chemical change within the mouth, and necrosis may result.

Copper amalgam in itself may not be injurious to the general health, but when combined with oxygen, an oxide is formed, for which acetic acid has a great affinity, and sub-acetate of copper is formed, which is a very active poison. Let us not follow the sometimes necessary course of many who, in their efforts to restore the health of their patients, do so at the sacrifice of the teeth. On the contrary let us not destroy the health of our patients in order to save the teeth.

Dr. Howard discussed, in a general way, the bacteriological phase of the subject, and in the practical application of his remarks, said that the teeth of the habitually unclean, when filled with mineral material gave out much earlier than when filled with any one of the metals. It was assumed, of course, that the work had been done equally well in such cases. He had also noticed that toothache from exposed dentine could be intensified by simple neglect of the brush, and effectually cured, or, in very bad cases, kept under by thorough brushing at regular intervals, and this without the aid of dentifrice. He spoke trom long experience with exposed dentine in his own teeth, comfort seeming to depend chiefly on regularity in the performance of this duty.

Dr. Howell spoke of the corrosive effect of the secretions of some mouths on amalgam fillings at the margins of cavities, the absorption by the dental tissues of this product, and its apparent preservative effect as against decay. The resistance offered by the tooth to decay seemed to be directly as the stained territory and the depth or degree of the stain. He thought it a mistake to speak of this product as an oxide of mercury ; it was sulphide of silver, chloride of tin, or both.

Dr. Howard remarked that decay of the teeth was comparatively rare in carniverous animals, but common in the herbiverous, accounting for the difference on the ground of food.

Dr. Hofheinz thought the difference in forms of the teeth had much more to do with relative liability to decay than food.

Dr. Miller described a case of pyorrhea in one of his household pets—a poodle.

In January the Society met with Dr. Salter, Dr. Cowan, of Geneseo, reading the paper of the evening. This consisted of detailed descriptions of bridge cases, in which the support was furnished by a crowned root at one part and a curved wire in the pulp chamber at another, the wire being buried in well-made gold fillings. Another feature of these bridge pieces was that contact with teeth other than the supports was wholly avoided. Drawings, models and several practical pieces of the work were used by the speaker to make his meaning clear.

The exhibit consisted of How root-trimmers by the essayist, and a marsupial skull with numerous and interesting peculiarities, by Dr. Howard.

The February meeting was with Dr. Hert, who read the following paper on

ADHESION IN FILLING TEETH.

Adhesion is that force which causes one substance to stick, or become attached, to another. There are three filling materials used by dentists possessing this quality to a greater or less degree. They are gutta percha, oxy-chloride and oxy-phosphate, which latter is now commonly called cement. Of these, gutta percha is the least adhesive, but when heated sufficiently, or having the surface dissolved by chloroform, it will, if not in too exposed a situation, adhere firmly enough to the dry surface of a tooth to retain itself in position.

Oxy-chloride was at one time in great demand as a filling material ; it is quite adhesive, but is now so little used that I will not dwell upon it, but pass to oxy-phosphate, which is becoming more and more valuable to the dentist, and principally because of the adhesive power it possesses to so marked a degree.

There are a number of ways in which this quality is made available ; of these I will give several, the first being the method now in quite general use, of mixing oxy-phosphate and amalgam, and thereby getting the adhesive property of the oxy-phosphate and somewhat of the durability of amalgam. Although this filling wears longer than cement alone, it does not wear as long as amalgam. I have therefore, in the past year, carried the use of this filling still further, and underneath almost all of my amalgam fillings have first put in the mixed cement and amalgam, almost filling the cavity with it, then adding a thin surface of amalgam and, in many cases, relying only on the adhesion of the deeper filling to the tooth to retain all in place, and having no undercuts whatever. At first I only filled in this way where there would be but little strain on the fillings, but of late have filled in all parts of the teeth in this manner, and among others in masticating-approximate cavities, where they would be subjected to quite severe usage, and have, as far as I know, had none of them fail. Of course, when the cavity naturally had undercuts and they could be left without injury to the teeth, I always left them ; but I now make no undercuts or retaining points to hold amalgam fillings in place, relying entirely on adhesion, in the manner before described, to keep them there.

This method, I believe, is much better than relying on undercuts, because in many cases it saves the patient much pain, as the making of undercuts is often the most painful part in the preparation of a cavity. Also, it does not destroy the life of a portion of the tooth and thereby, as well as by impairing the strength of the tooth, make it more prone to decay.

This method will also, it seems to me, prevent, to a great extent, the shrinkage which often occurs in fillings made of amalgam only, for as cement and amalgam mixed do not shrink, appreciably at least, by putting a thin coating of amalgam over them and having the amalgam unite with the amalgam in the mixed filling, the latter would prevent the former from shrinking. In this way amalgam, although not adhesive, can be made about as useful as though it were an adhesive filling.

Cement is sometimes used in combination with gold, a cohesive piece of gold being embedded in the cement ; and I have put in several contour fillings, depending almost entirely on gold embedded in this way to keep them in place, and found it to work, so far, successfully. This way is especially useful when the cavity is large, in close proximity to the pulp, and there is not much opportunity to get secure undercuts. There are other ways of taking advantage of the adhesiveness of cement, but I will now close, leaving them to be spoken of by others.

Dr. Howell did not like to depend too much on adhesion, but rather on adhesion and undercut.

Dr. Watson (Canandaigua) depended very little on special undercut for the retention of amalgam, the more or less spherical form of the cavity answering every purpose. He sometimes used balsam in chloroform to retain the first piece of gold—a sort of "starter."

Dr. Arnold had used oxy-phosphate to fix gold at the beginning of an operation, and especially in teeth too sensitive to permit thorough cutting; also in cavities with walls so smooth that they seemed greasy, he had used oxy-phosphate as a retainer very successfully.

Dr. Howard thought small cement fillings much more durable than large, suggesting the part played in their destruction by attrition. He thought the addition of alloy would prolong the usefulness of a plastic.

Dr. French recalled the almost forgotten fact that oxy-chloride gives out in alkaline secretions. He used Sturer's gold as a "starter," a gold very much like the old fashioned Morgan's plastic.

Dr. LaSalle said he had recently removed, on account of secondary decay, several gold fillings, put in some years before by one of the best of Rochester's dentists. In effecting their removal he had to dig for something more than gold, which he found on examination to be balsam. Adhesiveness in these cases seemed justified the use of some such material.*

Dr. Brown (Mt. Morris) had used gold and amalgam in the same cavity, the amalgam as a retainer. He had also used cement and amalgam in the same cavity. Balsam he did not like; it had a back-action way—got out of the cavity as fast as he could get it in.

Dr. Requa had used oxy-phosphate instead of retaining pits with great satisfaction. He stuck a pellet of gold into the cement, let the cement harden, and then proceeded to a finish.

In closing the discussion, Dr. Hert disabused several of the notion that he thought he had presented anything new. New ideas were desirable, but not essential so far as provoking discussion was concerned.

Drs. Howell and Smith entertained the Society the evening of March 10th, Dr. Howell reading the paper, his subject being

DENTIFRICES AND LOCAL REMEDIES.

In this paper I propose to treat somewhat briefly the conditions of the mouth and gums requiring dentifrices, antiseptics or mechanical treatment, without attempting to enter into oral chemistry, also touching very lightly upon the effects of constitutional disorders, except, perhaps, to speak of the palliative effects of some remedies; and while believing very strongly in palliative preventives and truly antiseptic lotions *where indicated*, I am friendly in a very slight degree only to most of the so called medicinal tooth powders which have as yet come under my notice. I have quite frequently had patients ask my opinion of prescriptions for tooth powders given them by some former dentist, but more often physician, and usually they can be read quite as well from the back as front, for we all know pretty well what they call for—very seldom anything outside of powdered myrrh, orris root, or cinchona bark, with powdered chalk, but occasionally a more sensible dash of oil of wintergreen or carbolic acid, and in one or two cases where the gums were hard and firm, the secretions of the mouth healthy and seemed to have always been so, I found a percentage of tartaric acid. I have never said anything against such preparations where patients have used them a long time without any apparent bad results, except, perhaps, to suggest that a powder less like a drug store in character, simply frictional and cleansing, with the additional property of being easily cleansed out itself, would be quite sufficient ; for instance, something like the powder we sell. I do not always effect a sale, for there are people who take cholera medicine from April till October, and the cholera never nearer than Asia.

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*The dentist in question (now retired) writes that he got the idea of balsam as a retainer from Dr. Bronson's paper before the Odontological Society, published in the Transactions for 1879.

In regard to the agents I first mentioned, I will quote from Dr. Henry Leefmanm in the American System, which appears to be reasonable and practical, and is as follows. " It does not seem reasonable to suppose, in spite of the general learning of the profession in this direction, that the use of any of the unsoluble vegetable powders, such as orris root and cinchona bark, is advisable. These substances are wholly insoluble and very slow to decay, and minute spicules of them remain for a long time in the gums and promote germ development."

I have always condemned, unhesitatingly, but I do not think unreasonably, any and all forms of fluid dentrifices, simply because I believe that mechanical friction applied in as nearly as possible the direction of the fiber, or the rods of the enamel, more nearly approximates the natural use and wear of the teeth of which cooked foods and so-called dentists have deprived so many of us, and is certainly more stimulating than so-called solvents, which must be solvents indeed if, within the short time which they are in contact with the substances they are supposed to dissolve, they avail anything; because, in four mouths out of five that are out of the normal or healthy condition we find calcareous or other deposits, which are more easily dissolved with a pickaxe ; but if there is anything of that nature which will not injure the mucus membrane or dissolve the teeth as well, I should like to know of it.

There are, however, many conditions where the simple slightly antiseptic and frictional dentifrice—which to my mind is the ideal one—should be supplemented by a remedial lotion or, perhaps, discontinued temporarily, as in cases where there are pus pockets or crypts, providing places for its retention where it might prove an irritant or a hindrance to the action of the medicine in any case I think the medicine is best not complicated with dentrifice, as it is much more easily strengthened, weakened, or changed according to the existing conditions or necessities. I am not prepared to write a paper on oral pathology, and will only add, in regard to lotions and washes, that after a thorough mechanical treatment, when indicated—and it usually is—where the patient has half way observed the laws of cleanliness, I have been quite successful in curing a great many disagreeable conditions of the mouth and gums of local and semi-constitutional origin, with the use of such remedies and others that I need not mention here.

In the discussion, which we have just room to mention in the briefest possible manner, Dr. Arnold said he had insisted upon the frequent use by fever patients of a preparation of glycerine, chlorate of potash and carbolic acid. The accumulations in the mouths of such patients, offensive alike to patients and friends, were effectually dispersed by the faithful use of this prescription.

Dr. La Salle detailed the the case of a vocalist who had ruined his teeth for the sake of his voice, by the inordinate use of lemons. Also the case of a lady who had all but lost a beautiful set of teeth through the advice of her nurse to indulge freely in the use of lemons that the child's bones might be kept soft and delivery thereby made easy.

Dr. Hofheinz spoke of a case in which a piece of bridge-work had become, after but a few months' wear, as black as jet, and which he was disposed to attribute to poor solder. But gold fillings of a dozen years' standing in lower teeth were in like condition. It seems the lady's brother was a druggist and had prescribed for oral irritation a solution of bi-chloride of mercury. It was not deemed necessary to look further for the cause of this change in the appearance of the bridge and fillings.

Dr. Cowan spoke of the abuse of myrrh, and cited a case in which it had been used for congested condition of the gums, persisted in after it had effected a cure until the last state of the gums was worse than the first. He had advised its discontinuance, since when the soft tissues had greatly improved. He regarded this as a case of over-medication.

Dr. Howard did not believe in medicinal preparations for merely cleansing purposes. He would medicate a dentifrice for a specific purpose only.

COMBINATION FILLINGS.

BY R. H. HOFHEINZ, D. D. S., ROCHESTER, N. Y.

[READ BEFORE THE SEVENTH DISTRICT DENTAL SOCIETY.]

The little paper I am about to read to you is neither specifically original in its contents, nor very revolutionary in its ideas. It is simply a compilation of ideas, advanced by different members of our profession, including my own individual mode of manipulation. To avoid any discrepancy regarding my position as operator, I will say that I neither worship gold as the only material God has given us to preserve teeth, nor do I look upon the plastic method as the only one that deserves recognition. I travel the happy middle isle, use whatever I deem best for the tooth, and I will save the tooth under any circumstances, if pathological conditions permit, be it by a gutta percha filling or by a Richmond crown.

The question of gold filling I will dispose of at once by saying: Whenever the structure of the tooth substance, the nature of the cavity, and the pocket book of the patient permits its use, it is the ideal filling, and will hold the first rank as a filling material as long as the gradual process of degeneration in tooth substance has not made it absolutely worthless. But, gentlemen, how many thousands of teeth do we meet with where the exclusive use of gold would be simply an act of ignorance, or stubbornness, its sister. It is to these teeth that my paper refers.

The principal filling materials we possess to-day are gold, tin, amalgam, gutta percha and cement. Each one of these materials holds its distinctive position, each has its great intrinsic value, but can be made more generally valuable by combining one with the other. Let me first speak of cement. What splendid success can we attain with it, and what lamentable failures do we see daily, where it is used in approximal cavities that extend to the gum, or where it is left unprotected to heavy use in mastication. Cement alone is a temporary filling only, and only its combination with other fillings makes it more or less permanent. In large approximal cavities I use gutta percha, as a rule, for cervical wall protection; if not, then what I consider the ideal wall filling, tin. To make cement resist the force of mastication, a number of combinations are now resorted to. The most frequent is amalgam, added during the process of mixing the cement, thus incorporating it. My mode of using it is the following : I add sufficient phosphate to the acid to make a semi-solid mass, then I add small particles of the amalgam, and incorporate until it is in proper consistency for use ; I fill my cavity either entirely with this material, or what I more frequently resort to now, all but the edges and the grinding surface, for which I use amalgam alone. It can be placed on the amalgo-cement filling readily, and will adhere without having any special undercuts for its reception. You thus get cement filling with an amalgam layer over it for protection.

This process is especially recommendable in large, shallow cavities, where amalgam alone would not stay on account of the shape of the cavity, and it is a filling which has given me great satisfaction in children's teeth. This combination gives us the use of amalgam without some of its objections, namely large quantity and great shrinkage. It is advocated to use filings only, without amalgamation, in connection with cement. I have used such, but where I do not finish with a thin amalgam layer, I prefer the use of tin. I file up some block tin and incorporate with the cement, and the results are good—far better than cement alone. I have filled large cavities in front teeth, and after a time refilled with gold ; often fill large cavities with it previous to crowning.

Cement and gold have long been used together, cement being the bottom filling, thus protecting the pulp from the caloric influence of the metal. It is now used in a two-fold way, both as a pulp protector and a retainer of the gold filling in shallow cavities where the pulp is nearly exposed, and where it would be dangerous to get sufficient retaining shape to the cavity. A rather soft grade of oxyphosphate is placed in the bottom of the cavity, and before setting, a pellet of gold is pressed into the cement and left until the cement is thoroughly hard. When the cement has set the gold can be condensed and will be found to adhere thoroughly ; you can continue filling in the usual way and have a filling actually cemented in. I find this method very applicable in buccal cavities of molars, and especially in the large labial cavities of front teeth.

One other combination of cement I will mention, namely : the addition of some anticeptic, thus increasing the value of it as a filling for deep-seated cavities. The only apparent success I have had is the addition of iodoform. The addition of ¼ iodoform to ¾ the phosphate powder will not materially change the solidity of the filling ; frequently use it in deep-seated cavities previous to crowning.

The last, and to me most valuable, combination is gold and other filling materials. I have already mentioned gold and cement. We have left gold and amalgam, gold and tin. Gold and amalgam I have rarely used. I have, in deep-seated cavities of bicuspeds, put a pellet of gold against the anterior wall of the cavity, to prevent discoloration. Since I resort to cement and its combinations, I rarely use such, however. Differently must I speak of gold and tin—tin, the old friend of 50 years ago. Any one who wishes to use tin alone, I refer to the article by Dr. Harlan, in the April, '90, number of the ODONTOGRAPHIC JOURNAL. I can only speak of it in its combination. It is the only material, in my belief, that has proved a success as a cervical wall protector, and as such has outlived all other materials. When practicing in Vienna eight years ago, I had the opportunity of seeing a great many gold and tin fillings, done by the peer of American dentists in Europe, Dr. Abbott, of Berlin. I examined every one carefully. I saw fillings that had been inserted eighteen years before, and, gentlemen, the cervical walls remained free from decay. I said to myself, go home and do likewise. I did so to the best of my ability and, I think, with good results. I never fill approximal cavities back of the cuspid with gold, without protecting my cervical wall with tin. Yes, I have extended that practice to protecting all walls with tin, excepting those of the grinding surface, as you will see in one of the specimenss

My manipulation is simple. I roll up a cylinder of tin, and press and burnish against the cervical wall ; if the cavity is very large and far below the margin of the gum, as in the specimen, I use two pellets and wedge them in place ; I continue with soft cylinders, and complete the work with cohesive foil. In extremely large cavities I use, as already stated, tin-aurum extensively. I use a layer against the cervical wall, a layer against the walls towards the grinding surface, leaving space in the center, into which I crowd a cylinder of cohesive gold, and build on to this, secure my filling well in the masticating surface of the tooth, and thus have a filling showing but gold, and yet every wall nearly protected by tin. This method requires frequent manipulation before success can be attained, and is easiest for the operator who has used soft gold cylinders in filling large approximal cavities.

Why tin is a far superior metal to gold in saving tooth walls is readily explained : the tin is a softer, more pliant under the instrument, and a more readily adjusted material; it has certain therapeutic properties as an obtundent of sensitive dentine ; it certainly exerts a restraining influence on the recurrence of decay, which is best demonstrated in removing old and greatly worn tin fillings, which, though leaky, show very little, if any, disintegration. In tin alone we may suppose this influence due to chemical change. According to an editorial in the *Ohio Journal of Dental Science*, it is asserted that where tin corrodes in the mouth the re-agent is likely to be chlorine rather than oxygen. This would give us chloride of tin or stannous chloride, which acts definitely on the organic matter of the tooth, rendering it less soluble and therefore less liable to decay. In connection with gold, the tin's antiseptic influence may be due to electro-chemical change. We will find that tin in connection with gold oxidizes very readily. The reason of increased oxidation being that gold is negative and tin positive, and by reason of contact the current is confined to the two metals. These theories may not be absolutely established, but hypothetical or not, the fact remains that tin is the greatest saving agent of the many poorly developed teeth. I hope, gentlemen, that some points in my paper have been of sufficient interest to you to follow them, and I hope you will, by so doing, improve my methods and enlighten us at some other time.

LANCING OF THE GUMS.

We take the following from Dr. James W. White's article on "Pathological Dentition" in *Annuals of Gynæcology and Pœdiatry.* Until made desperate by experience with one of "our very own," then struggling with his superior central incisors, we would not be convinced that it sometimes hurt to grow, but now, however, we always give the little sufferer the full benefit of the doubt.

The impropriety of indiscriminate lancing need not be argued ; it is self-evident. But when indicated, the arguments generally employed in opposition are puerile, if not ridiculous.

The conclusions arrived at by a recent writer concerning lancing of the gums are as follows :

I. "It is useless, *a*, as far as giving relief to symptoms; *b*, as far as facilitating or hastening teeth.

II. "It is useful only as blood-letting and ought not to be used as such.

III. "It is harmless, *a*, in producing local trouble ; *b*, in producing general disturbance on accouut of hæmorrhage ; *c*, in having established a method which is too general to do specific good, and too specific for universal use."

That lancing DOES give relief to symptoms which indicate dental disturbances will not be denied by any one who has in any considerable number of cases intelligently observed. That it is useful *only* in blood-letting, is a claim that displays ignorance of the object sought in an intelligent use of the lancet in infantile dentition, That "it ought not to be used as such," (*sic!*) no one will dispute. That it produces "local trouble" or "general disturbance on account of hæmorrhage," is a position which indicates either a peculiar experience or unskillful operations, or it is a mere assumption.

The advocates of judicious lancing do not seek to establish a "general method" nor a "specific for universal use."

In an experience of more than thirty years, during which his opportunities and experiences in this department of practice have been somewhat exceptionally large, the writer has never seen "local trouble" produced by the lance, nor a hæmorrhage which called for an interference. When there was any considerable show of blood, it was from the instant discharge of that which was no longer in the circulation and had collected in a sac-like tumor over the tooth.

Undoubtedly there are many instances in which the irritation of dentition is coincident with other disorders not dependent upon that process, and in such cases the associated derangements demand appropriate treatment. But when the disturbance is due to tension. to the pressure of the unyielding gum upon the sensitive tissues at the incomplete foreman of the root, neither systemic medication nor scarification of the gums will avail. Scarification for the purpose of blood-letting may temporarily relieve the capillary distention, but is not an intelligent procedure, because, while involving every possible risk which might be urged as an objection to lancing, it does not relieve the pressure as does a free, clean incision which liberates the tooth. The writer has had cases in which the lancet had to be carried quite a little distance through the gum before reaching the presenting surface of the tooth, which, by the disappearance of the tumidity was visible in twenty-four hours thereafter.

The liability to any considerable loss of blood, which it is acknowledged is possible, cannot be very great; would certainly be almost surely prevented, if threatened, by an ordinary styptic such as alum in fine powder, or by a little pressure, and such slight liability must be accepted; a wise discrimination avoiding operation in cases especially threatening either by systemic condition or family history. Medicine and surgery are alike a choice of evils, and to choose the lesser evil is the aim of all practitioners; one cannot escape risk of error by simply doing nothing. The *cruelty* of the operation is in the imagination of the objector. A child erupting its third year molars, having previously been submitted to the operation of the lancet over one or two teeth, and appreciating the relief therefrom, will sometimes come voluntary to the physician, point out with little finger the next erupting tooth, and stand by his knee while a similar relief is afforded. A little finesse will sometimes enable the physician, having gained the attention of an infant, to lance, one after another, two or four teeth while interesting the child by artful tricks of expression or voice, without a whimper from the victim. The resistance of the cicatricial tissue is a myth. That the operation has sometimes to be repeated applies equally to the failure of a single dose to check a diarrhœa or overcome a constipation.

When either the local appearance, or the systemic condition, or both, suggest the use of the lancet, the one object should be to divide the gum so as to release the advancing tooth. The cuts should therefore be made with special reference to the form of the erupting tooth, and sufficiently deep to reach the presenting surface, The incisors and cuspids need only a division in the line of the arch. The molars require a crucial incision, at once easier of performance, and more effective than a right-angular division—the centre of the crown, as near as can be determined, indicating the point of descussation. The partial eruption of a cuspid or molar does not lessen the pressure upon or by the gum-tissue. The cone shape of the cuspid maintains the pressure by the inclosing ring, which should be severed on the interior and posterior as well as on the lateral surfaces, if a question as to the relation of its eruption to reflex troubles is to be settled. So also the points or cusps of a molar may have erupted, and yet the resistance of the gum-tissue remain operative, and require a severance by crucial or circumferential incisions to release it.

THE RUDIMENTS OF DENTISTRY.

What, then, are the rudiments of dentistry,—the "first principles" of the science? If with any propriety it is to be classed as a branch of the healing art (whether practiced as a distinct profession or as a specialty of medicine matters not,—the difference is that of name merely), its intelligent pursuit has a basis in common with medicine. A competency to treat intelligently any part of the animal economy presupposes a knowledge of the anatomical structure of the part, the relations to surrounding parts, the nervous, arterial, and venous connections, the recognition of pathological conditions, and the philosophy of therapeutics,—in short the dentist, should comprehend the anatomy, histology, physiology, and pathology of every tissue of the mouth, the causes of aberration, and the means and methods of restoring abnormal to healthy conditions. How else can it be expected that he should appreciate the nature of the changes in structure and function which are called disease, or the conditions which hinder or promote normal processes? If pathology means preverted nutrition, and if dental lesions are expressions of such perversions, the consideration of their cause and treatment, whether local or constitutional, expresses the medical aspect of the practice. To know *what* to do is the duty of the apprentice; to know *why* is the privilege of the expert. To know what will give relief in a diseased condition is the *art*; to know *why* is the science. Can such appreciative knowledge be acquired except by the understanding of organic functions,—of respiration, circulation, digestion, assimilation, secretion, sensation and motion? How else can inflammation and its consequences be apprehended and combated? And without such knowledge how dare anyone administer an anesthetic?

This is the sort of knowledge—not the details of mechanical manipulation—which constitutes the rudiments, the institutes, the basal principles of medicine and dentistry alike.

Specialism is the inevitable outcome of the extention of medical art and science, and the notable advances made by specialists have compelled both popular and professional recognition. It is acknowledged on all hands that it is utterly impossible for any one man to master medical and surgical practice in all of their details. Specialists, however, command respect as such only by unquestioned special qualification, and a limitation to a specialty without assured special qualification invites no such recognition as is otherwise freely accorded.

The variety and importance of oral lesions are not open to question, nor is there danger that any man may bring to the practice of dentistry talent or skill for which he will not find fitting opportunity. —Editorial, *Dental Cosmos.*

THE COLORLESS CELLS OF THE BLOOD.

The little nucleated naked and colorless masses of active protoplasm observed among the colored cells in the blood are elements having a very wide distribution, being constant among the vertebrates, and occurring in the circulating fluid in many of the lower animals.

The colorless or "white" blood corpuscles represent the type of the embryonal cell, and exhibit in a high degree the characteristics of free, active, formative protoplasm, such as in the early stages of the animal constituted its greater part. In common with all other free masses of active protoplasm, these cells continually exhibit marked alterations in form, and since such changes closely resemble those observed in that simple animal, the *Amœba*, they were, naturally enough, termed "amœboid," and while, of course, not identical, the *Amœba* and the colorless blood cell both possess this characteristic of active protoplasm, the substance of which both are formed.

The single cell of the *Amœba* constitutes the entire individual, leading an independent existence, and ministering only to its individual needs ; the colorless blood corpuscle, on the contrary, is but one of a great community of cells, each member of which, while primarily concerned in its own necessities, is engaged in the maintenance and promotion of the general wealth of the entire organism.

The structure of the protoplasm of these elements is a subject which has attracted much attention and elicited bitter discussion. As usual, the truth lies midway between the extremes of the conflicting opinions. It is now well established, and generally accepted, that tne living protoplasm of active cells, as the colorless blood corpuscles, is composed of two parts : the active, contractile, albuminous bioplasm, and the relatively inert paraplasm ; upon the arrangement of these two constituents of the cell does the appearance of its protoplasm depend. Where both bioplasm and paraplasm occur as closely intermingled particles a finely granular appearance results ; where the protoplasm is heaped up together, dividing the protoplasm into bands and septa, a more or less perfect network or reticulum is formed. An important fact to be appreciated in this connection is, that the arrangement of the constituents of protoplasm is not constant, but subject to continual change, a truth that every one who has carefully studied the white blood cell under high powers must admit ; in such elements, the formation, transient presence, and disappearance of networks are continually occurring, demonstrating the inaccuracy of describing temporary conditions as the constant structure of protoplasm. In cells more highly specialized than the colorless blood corpuscle, especially in those where particles of secretion are often stored, as in the glandular epithelium, a reticulated condition of the protoplasm is very marked ; the bioplasm is pushed aside by the inert substances, the entire cell assuming a sponge-like arrangement, in which the framework is formed by the active contractile substance, while the passive materials fill the interspaces.

The reproduction of the white blood cell is of interest, as affording one of the gradually decreasing group for which the direct mode of division is still recognized. That division in the simplest manner does here take place seems to admit of little doubt, but, on the other hand, it is highly probable that the indirect mode, accompanied by complicated nuclear changes, or karyomitosis, may also be followed in the division of some, at least, of these cells.

Studied as they so usually are, as elements of the blood, we too often forget their true nature, and regard them as peculiar to this fluid. Originating in the various accumulations of adenoid tissue throughout the body, the lymphatic glands, they form the "lymphoid cells"; passing into, and circulating through, the lymphatic vessels, they are the "lymph corpuscles"; on being poured into the venous stream, they become the "white" cells of the blood, the "leucocytes"; passing beyond the limits of the blood and lymph channels into various structures, they constitute the "wandering cells" of connective and of other tissues; in the marrow, they are the "marrow cells"; in short, we have to deal with a widely distributed element, whose names are as various as the locations in which it is encountered, but which names all refer to one and the same morphological element.

The genetic relation between the colorless and the colored cells of the blood, the white being regarded as the progenitors of the red, yearly becomes more doubtful, while the estimation of the colorless cells as independent elements, having but slight direct relation with the red, gains ground, being more in accord with the broader views taught by recent investigations. The colorless cells of the blood are to be considered, not as younger or immature forms of the red corpuscles, but as circulating masses of reserved formative protoplasm, the direct descendants or representatives of the great energetic mesoblastic tract; these particles—"Protoblasts" [Kölliker], they may be called—play a double roll, removing broken down and effete matters, and repairing destructive processes by supplying material for new tissues. The white blood cells are the sanitary police of the economy, even mingling with the crowds that throng that great highway of exchange, the blood, to take up and remove offensive and injurious debris, to suppress the undesirable presence of degenerate members of the community of cells, even to the arrest and imprisonment of obnoxious intruding microbes; nor are these faithful patrolmen content to limit their vigils to the frequented thoroughfares, but they pass out into the tortuous byways and narrow lanes of the tissues themselves, penetrating into remotest nooks and darkest corners of the lymphatic clefts in the performance of their duty; on the other hand, they guard with jealous zeal the integrity of their domain; should structural injury occur to any part, they are easily on the guard to resist destructive processes and to furnish active aid in instituting repairs.—PIERSOL, *The Microscope.*

FERMENTATION.

Mr. Duclaux admirably defines fermentations in the following words: "Chemical transformations of substances dissolved under the influences of organized beings, always deprived of chlorophyl, which develop and live in the interior of the liquid which ferments." This refers, seemingly, particularly to the well-known and common phenomenå of fermentation in liquid substances; however, such transformations take place in semi-fluid substances, and in more or less solid matters, but the changes in these were not supposed to be varieties of fermentation until the special properties of bacteria were clearly demonstrated.

In the study of fermentation, Pasteur discovered that bacteria differ greatly in regard to their respective want of oxygen. Everything else being equal, he found at one end of the scale, microbes that are favored in the highest degree by the greatest amount possible of atmospheric air containing free oxygen. Such is the case, for instance, with the *bacillus subtilis*, which grows so well in open air, in hay infusions, etc.; at the other extremity, he found some favored by the exclusion of free oxygen; such is the *bacillus butyricus*, which may develop in the very center of a mass of butter, and produce butryc acid, which, with other elements, contributes to produce rancidity in butter. The first kind has been termed, therefore, *aerobiotic;* the second, *anaerobiotic.*

Between these two extremes, there are some requiring less pressure of oxygen than that afforded by atmospheric air. According to Nageli, the aerobiotic forms may also vegetate without free oxygen. Thus it would seem that this division of bacteria into aerobiotic and anaerobiotic is not absolute or defined by a clear line.

It is not our province to study all the phenomena of various fermentations here, but it is well to understand the most important ones. Therefore, we will touch on one or two more; namely, the production of heat and certain results of fermentation. In our study of the nutrition of microbes, we have glanced at most of the other interesting ones.

During the process of fermentation, there is produced more or less heat. Everyone knows of the high temperature created in a manure heap, vegetables in a silo, or a stack of hay in fermentation ; it sometimes rises sufficiently high to consume to ashes, or even cause spontaneous combustion. "Fermentation," says Cornil and Babes, "is a sort of intra-molecular respiration of the schizomycetes. The chemical reaction resulting then produces heat which is also necessary for the development and multiplication in the fermentescible matter." Robin has well explained that they are "particular cases of nutrition, chemical nutritave acts, with production of heat as in most of such acts."

Still, whether we consider fermentation from a botanical or chemical standpoint, everything is not absolutely clear, and it is possible that future investigations will modify the views now prevalent among naturalists, as to what individuals may be properly termed ferment producing agents. But we have a mass of facts, proving at least the result of the existence of various microbes at the expense of fermentable substances, viz., transformation. One result of fermentation, or chemical transformation, brought about by the nutritive processes of micro-organisms, is important to know from a pathological standpoint above all others, that is, the possible *death* of the ferment agents themselves in their own products, poisoning in their own effete matter. Thus, in alcoholic fermentation, the schizomycetes causing it, yeast plant and others, are intercepted in their vegetation when the alcohol produced in the media in which they live has reached about 17 per cent.; the quantity of alcohol seems to constitute their poison. In the fermentation of wines in sealed vessels, fermentation stops thus by itself. If, on the contrary this fermentation is allowed in the air, the surface will soon be covered by another organism which transforms the alcohol generated by the preceding germ into water and carbonic acid ; this organism is the *mycoderma vini*, which burns the alcohol and turns it into vinegar. A succession of microbic lives may thus exist and die in a given media, the first forming material, in a measure, for the nourishment of the second, the second for the third, etc. In these alcoholic and acetic fermentations, the first organisms acting were anaerobiotic ; the alcohol resulted from yeast plants living at the bottom of the fermentescible matter, at a remote distance from the free oxygen of the atmospheric air ; the second or third forms that succeeded to the dead alcohol producers were aerobiotic, and lived on the surface in contact with free oxygen.

In pathology we find bacteria of the same aerobiotic and anaerobiotic classes. The bacillus of anthrax (charbon), for instance, belongs to the former kind and that of symptomatic anthrax (blackleg) to the latter. In the cultivation of disease germs, we find, too, that they may be killed by poisons produced by themselves, and that different kinds of bacteria may succeed each other in the midst, and partly at the expense of the products of preceding ones.—*Bacteriological World.*

THE FIRST MOLAR.

There is perhaps no tooth that causes more difficulty than the first molar. There is no tooth that is more important to our patients. The difficulty results from the fact that it is presented in the month so early, being the first of the permanent teeth to erupt. We owe more to parents and their children in an educational way with this tooth than with any other, in order that we may treat it before it is destroyed. It decays oftener than other teeth simply for the reason that it is exposed earlier. Decay of the teeth takes place in youth principally. True we have decay occuring in the teeth of older people, but the great bulk of decays begin early in life, and this tooth which is presented earlier than the rest is more liable to decay, not because it is less well developed, or well organized.

The question of extraction of this tooth is more important than with any other, on account of its physiological relations to the development of the jaws. If we extract this tooth soon after it erupts we shorten the face about the width of the tooth. If we extract it before the full development of the jaw, we shorten the face more or less. If we extract on one side of the face, we have inevitably a one-sided face. One side is shorter than the other, and the teeth are slewed around literally. These are some of the reasons for especial care in retaining this tooth. There is no other except an incissor in the upper jaw, the loss of which alters the natural expression of the face so much. Now, when a case is presented the first question, no matter what the conditions may be is, "Can the tooth be saved? Can it be saved temporarily, or till the other teeth make their appearance?" If that question is answered in the affirmative; if there is a reasonable chance, we should try to save it until the full development of the bones of the jaw, whether it be by capping the pulp, removing it or what not.

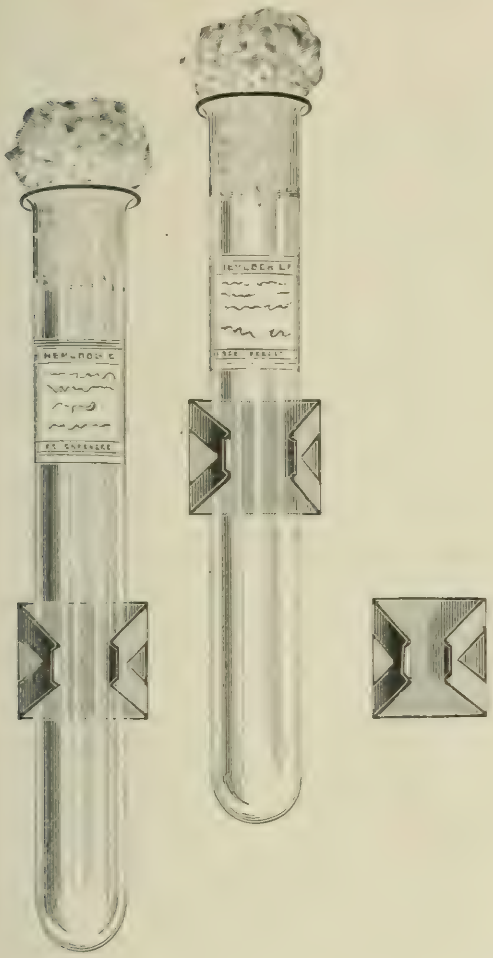
In regard to the question of a tooth becoming harder after we remove the pulp; I will say that we have no physiological action between the cementum and the dentine. We have a physical, but not a physiological connection. The dentine is dead when we remove the pulp; the cementum is alive and continually growing. The cementum is not complete when the dentine is complete, at what we term maturity—in fact the cementum may grow after a person is 40, 50, or more years old; and become thinker, and will be deposited upon teeth that have lost their pulp, and in very many instances in such teeth the apical foreman is completely obliterated by cementum built over the apex. So far as the physiological action of the pericementum to the cementum is concerned, there is no objection to the removal of these pulps very early. The cementum will continue to develop about the apex of the roots, provided the conditions there are physiological, and not pathological. We may have an extraordinary development of cementum, or we may have no development at all. We may have an absorption of that which is already developed, and following the absorption we may have a re-deposit filling up the gaps, etc.

These points are well shown by sections of teeth. At least a large proportion of those cases in which teeth are united by cementum, accur after the death of the pulp. If a pulpless tooth or a piece of a root be left in the jaw, and by movement comes in contact with the root of another tooth, it may be united to it by cementum This simply shows how this cementum goes on developing after most of the teeth has been destroyed. Now it is a fact that the dentine becomes more brittle and therefore the tooth is more liable to break down if the pulp is destroyed very early, for the reason mostly that it has more time in which to break down, rather than on account of the difference in its calcification. It is probably true that the tooth becomes somewhat more dense with advancing age, but this increase is so slight that it amounts to but little.

A word in regard to putting shell crowns upon teeth for there little patients. Do not go clear down to the junction of the enamel and cementum. At this time the tooth is only partially through the gum. Cut away the distal and mesial surfaces until you can get it to fit close, then put on your shell crown down to the bulge of the tooth, which will be under the gum. In a few years the tooth is raised up to its proper position and thus becomes exposed below the band, you can then renew your operation, placing your shell crown further down and make it much better than you could have done at first, or put in fillings perhaps after that time and building up the mesial and distal surfaces.—Black, *Transactions, Illinois Dental Society.*

CULTURE-TUBE HOLDER.

It is customary in bacteriological work, whether in the larger laboratories or those characterized by the individual owners as "dens," to stack culture tubes in tumblers, goblets, beakers, etc., the bottom of the vessel being lined with cotton as a precautionary measure against breakage. In the examination of these tubes it is necessary to handle them separately, a matter of time and inconvenience. In the device herewith illustrated a lot of brass knife clamps are fastened, by means of the lugs punched and bent back from the sides, or a tack or screw through the center, to a piece of card or wood board, or for transportation, the bottom of a cigar box. When thus arranged they may be hung on the wall, carried about the room, examined, etc., by the dozen, and in this way time saved and inconvenience obviated. The clamps may be had on order of almost any hardware house.



DON'T BOYCOTT THE JOURNALS.

In this little discussion of dental journals and journalism, Dr. Harlan talks to the point. There is no mistaking what he means, and the facts are as he puts them. He might have gone further and declared for the benefit of all concerned, that the average dental journal of the twenty or more published in this country, leads the profession at large by several years, and at times it would seem as if the profession could never even hope to overtake it. As he suggests, the men who would have dental journals better than they are, should do something to that end. This does not apply to Dr. Patrick, however, who is one of the ablest of contributors to the dental press.

Dr. Patrick says he would like to prohibit all societies from giving their papers and transactions to dental journals. Now, there are a large number of dental societies in the United States ; they are not all State societies or district societies, and their membership being limited, they are unable to publish the papers and discussions at their own expense, and if the dental journals do not publish papers of this character with the accomping discussions, everything that is new or valuable would be lost, and there would be no incentive for men to prepare papers and read them before dental societies. Many valuable discoveries in science and in practice also would be lost.

With reference to the advertising of the dental trade association, that does not belong to dental journalism. It is true that the dental journals publish the advertisements of the dental trade association ; the *Dental Review* and the *Dental Cosmos* publish them in the advertising colnmns, where that sort of literature belongs under such circumstance. The editor of a dental journal is not expected to notice communications of that kind.

In looking over our medical journals, I find in the *Medical Record* and the *Medical News*, and nearly every other medicai journal in the country, articles occupying the place of original contributions which have been read before State or local Medical Societies.

I also find in looking at this subject that nearly all the leading medical journals of the country are published by the medical book-publishing houses ; that there is a disinclination on the part of physicians and surgeons to engage in the business of publishing, while there seems to be very little hesitancy about medical men becoming editors. The dental journals of the country—and I know them all with a few exceptions—are edited by dentists engaged in the practice of dentistry. Personally, I do not know of a sing'e dental journal that pays its editor a salary for editing it ; and there are only three journals of the country that are owned by dentists to my knowledge, viz : the *International Dental Journal*, the *Archives of Dentistry*, and the *Dental Review*. I know that if a communication is sent to me condemning any substance made by any man in the United States, if it has the stamp of sincerity on it, it will gain entrance to the journal. That I consider to be the condition in nearly every journalistic office in the country. You could not exist without dental journals, as badly as the reflect the opinions of the leading minds in this country to-day. If you desire more original articles, and more articles that will be to the point, it lies with you. If you do not write the articles; if you do not experiment; if you do not desire to thorize; if you do not invent, the dental editors have to publish the very best material they can get. They are not in a position of being able to buy articles from authors in the majority of instances at least, and perhaps a desire on the part of dentists to receive pay for their contributions, prevents their producing.—Harlan, *Transactions Illinois State Dental Society.*

TEMPORARY FILLINGS.

The teeth of women during gestation and lactation frequently require filling. Shall we use gutta-percha or oxyphosphate? For a number of years we have given a fair trial to each of the substances mentioned and have in consequence come to the following conclusions: In all proximal cavities reaching the cutting or grinding edges of teeth, we now use oxyphosphate of zinc, In labial or buccal cavaties we find gutta-percha most serviceable. In those proximal cavaties of molars or bicuspids midway between the gum and the cutting edge, we use gutta-percha if the cavity be deep—if shallow use oxyphosphate. To fill teeth at such times, with gold or other metals (unless plastic) is a waste of time and such operations are of doubtful value. Fillings of a temporary nature are often required for children and the same general rule may be observed in such cases with markedly beneficial results. All oxyphosphate fillings should be varnished, after hardening, and the varnish should be dried likewise.—Editorial, *Dental Review.*

PUTREFACTION

The transformation of dead bodies of all kinds does not depend solely on one kind of germ but on several. The *bacterium termo*, whilst it seemingly plays the most extensive and most important part in the decomposition of animal bodies, has many associates in its life. Consequently, the phenomena known as putrefaction consist of the whole of the transformations; putrefaction, in a word, is the sum total of the results of the nutrition of micro-ooganisms at the expense of dead vegetables and animals. In these phenomena "sugar is transformed into lactic acid, mannite, dextrine, glycerine, butyric acid, mucilage, etc. Alcohol is transformed into acetic, urea into carbonate of ammonia, albumen into peptone or other similar substances. There also are generated, the putrid poisonous substances named sepsine ; the septic alcaloids of Zuler and Sonnenschein ; the ptomaines found by Selmi, Gauthier and Breiger, etc.; certain narcotics ; leucine and tyrosine ; butyric, palmitic, margaric and fatty acids ; volatile products, iodol, phenol, scatol, sulphurated hydrogen, ammonia, carbonic acid, water, etc., etc.

Therefore, the surface of the soil is the seat of very important changes ; many needed products originate there, without which, the plants of the earth must fail to find sufficient and proper food. There, ammonia is decomposed by microbes and nitric acid is liberated ; this acid in its turn may be decomposed into its forma- elements or be returned to ammonia. These are the necessary phenomena of the nitrification of soils. The action of bacteria in the superficial layers of the earth is said to be indispensable for the germination of seeds therein. Duclaux found that sterilized earth is improper for germination.—*Bacteriological World.*

THE COLUMBIAN MEETING.

The following from the editorial department of a recent *Dental Cosmos*, contains a suggestion that "discordant elements," if such there be, would do well to heed. There is no middle ground to be thought of—the American dentist is "in it," or he's "irredeemably lost."

We give the prominence of editorial space to the initial circular of the Executive Committee of the great meeting which it is proposed to hold at Chicago in 1893. The enterprise, having the sanction of the American and the Southern Dental Associations, in both of which the vote approving it was passed without a dissenting voice, bids fair to be a grand scccess. It is to be earnestly hoped that no discordant elements may be allowed to interfere with the earnest and steady preparation which the magnitude and importance of the occasion demands. It needs only harmonious co-operation on the part of the dentists of the United States to insure a meeting which shall accomplish more permanent good results for dentistry than any previous event in its history.

I fail to see what advantages the phosphates can have as filling-material for root-canals ; their sticky nature renders them much more difficult to introduce than the oxychlorides, particularly in cases of narrow canals, and they are also decidedly inferior to the latter in antiseptic action.—Miller, *Dental Cosmos.*

"I do not think I ever was at a public meeting in England of any kind, *not excepting church prayer-meetings*, when the exercises were not opened in the name of the Queen."—Barrett, *Dental Review*. In the language of that greatest of Americans, John L. Sullivan, "Let me think."

CONDUCTORS' DEPARTMENT.

CONCERNING DR. WILLMOTT'S REMARKS—HIS LETTER—DR. BEERS' EDITORIAL.

In January we published a communication from "A Graduate of one of the Five Dollar Colleges," the provocation to which was what purported to be a correct report of Dr. J. B. Willmott's remarks at a dental dinner. This report, it seems, originated with a daily paper reporter and, as explained by Dr. Beers in an editorial which we publish herewith, got into the *Dominion Dental Journal* and to its many readers without correction, or perhaps we should say expurgation. It was this, to all appearances authoritative, report that moved our correspondent to such indignation, a state of mind shared at the time by many others. This, however, is now happily disposed of by Dr. Willmott, whose letter to the *Dominion Dental Journal* we gladly make room for, at the same time expressing our regret that he should have been so severely criticised on the anthority of what is now known to be an incorrect account of what was said. THE ODONTOGRAPHIC JOURNAL is not ambitious in the direction of unwarranted criticism, and we are quite sure that our correspondent is no more inclined that way than ourselves.

Following is Dr. Willmotts' letter :

A CORRECTION.

To the Editor of the Dominion Dental Journal :

DEAR SIR.—On opening the current number of the *Journal* this morning, I was astonished beyond measure, and, I fear, betrayed into some very uncomplimentary remarks respecting the editor, when I found myself reported as saying, at the dental student's dinner, that "Until recently, all that had been necessary for a medical or a dental student across the line to graduate was to be able to sign your name and produce a five dollar bill." Of course, I never made such a statement. I am not quite a fool. The report seems to have been taken from one of the daily papers which put some such statement into my mouth, but corrected it next morning in its editorial news column. I was speaking at the moment of the application of the R. C. D. S. for membership in the National Association of Dental Faculties, and referring to the good work which the Association had done in raising the standard, extending the term to three years, and securing a matriculation examination, remarking, incidentally, "that until in recent years all that was necessary to ***matriculate*** was to sign your name and produce a five dollar note." I matriculated in that way myself, and nothing more was at that time required. So far from belittling the American colleges, I was really congratulating dentistry on a vast improvement on the past. While writing, I may be allowed to add, that while always ready to defend the R. C. D. S. against false statements or unfair criticism, I am far too sensible of the defects in our college—defects which I see no near prospect of being remedied—to launch out in any such wholesale laudation as that with which I am credited. I am very sorry such a manifestly false statement found a place in your columns, as it must do me much harm. I trust that any of your exchanges who may have referred to the matter will give me the benefit of this correction. I have no special ambition to be known as the libeller of the American colleges, of one of which I am a graduate.

I am, yours etc.,

Toronto, Januray 1st, 1891. J. B. WILLMOTT.

DR. BEERS' EDITORIAL.

We draw attention to a letter in this issue from Dr. Willmott, in which he repudiates the sentiments put to his credit in his address at the college dinner. Unfortunately for ourselves, we were unable to accept the kind invitation of the students to be present, and the report was taken from a Toronto paper by a correspondent who also was not present, and who was ignorant of the correction next day, to which Dr. Willmott refers. It was sent to us, and immediately sent to the printer without reading. Owing to the absence of the publisher in Germany, *we did not even get the proof.* At any rate, we had no means of knowing what was said. Nobody who was present thought it worth the trouble to send us a report. When it was known in Toronto that a mistake had been made which was corrected the next day, the importance of sending this *Journal* the correction should have occurred to the party who had the report made right.

It ought not to overwork any one to supply us with reliable college reports. When the reporter of a Toronto paper present at the dinner (and it was a temperance one) cannot get an address correct, who can? Certainly not the editor, who was over four hundred miles away, and who has repeatedly appealed for exclusively official reports of college doings. All editors are immortal. None of them are omnipresent.

DIED, April 2, 1891, of pneumonia, Dr. William H. Atkinson, aged 76 years.

THE SAN FRANCISCO DENTAL ASSOCIATION.

WHEREAS:—Dr. J. N. Crouse, of Chicago, Ill., the chairman of the Dental Protective Association of the United States, is personally known by the President and other members of the San Francisco Dental Association to be an honest, earnest and enthusiastic worker for the good of the profession, therefore be it

RESOLVED—That this Association endorse the methods of Dr. Crouse, in conducting the Dental Protective Association and strongly urge every dentist of the Pacific Coast to become a member of said Association, and be it also

RESOLVED—That a copy of this resolution signed by the President and Secretary, be forwarded to Dr. Crouse with permission to insert in each circular that he sends to this Coast.

THOS. A. IGLEHART, Pres.
CHAS. E. POST, D. D. S., Rec. Sec.

"VET" NOTES.

At the dinner to the "Vets," it was a good State society man at our right who tried the entire latter half of evening to convince us that "The band played Annie Laurie, and Annie Rooney, too," when to our better knowledge the band didn't do anything of the kind, and more, there wasn't a band nearer than Jersey.

We got the complete report of the banquet to the patriarches, and are enabled thereby to present our readers this month with a number that will aid and abet good digestion wherever it abides. We don't say that some one of our would-be rivals in the journalistic field could not have obtained it, but merely inquire for the fun of the thing—*Habesne pull*?

Dr. Stockton, who sat with the "Vets" with all the dignity of a three-score-and-tenner, wrote himself for the autograph hunters as ten years in practice, and each of the mighty hunters said "Oh!"

Dr. Hill wanted to play ten pins, but Dr. Lord wouldn't have them in his alley.

When Dr. Kingsley quieted Bable with "Don't chin unless you have the floor," every body else sat down.

THE AMERICAN DENTAL SOCIETY OF EUROPE.

This Society will hold its 17th meeting at Heidelberg on the Neckar, in the Schloss Hotel, August 3d, 4th and 5th, 1891.

Officers: Dr. Wm. Patton, Cologne, President; Dr. I. B. Davenport, Paris, Vice-President; Dr. C. H. Adams, Frankfort a M, Treasurer; Lyman C. Bryan, Basel, Switz., Secretary. Executive Committee: Drs. Patton, Wetzel and Adams Membership Committee: Drs. Davenport, Jenkins and Miller.

CENTRAL DENTAL ASSOCIATION OF NORTHERN NEW JERSEY.

Officers: President, C. W. G. Holbrook, Newark; Vice, H. Iredell, New Brunswick; Secretary, S. S. Hawley, Cor. Warren and 13th Sts., Newark; Treasurer, Chas. A. Meeker, Newark; Executive Committee, George E. Adams, South Orange; R. M. Sanger, East Orange; S. C. G. Watkins, Montclair; W. L. Fish, Newark; B. F. Luckey, Paterson.

THE ALBANY MEETING.

The Dental Society of the State of New York, will hold its Annual Meeting at Albany, Wednesday and Thursday, May 13th and 14th, 1891.

Papers will be read and discussed by distinguished members of our profession, and all things will be done to promote the interests of practical and scientific dentistry. The full programme will be issued in a few days.

PELLETS.

The *Archives* still lives.

Motto in front of a wicked dentist's chair—"Grin and bear it."

Inexperienced Patient.—"If I have my teeth filled with gold will they *cavitate* again ?"

"Madam, you'd better have that root taken out." "But why ? It gives me no trouble, and it has always been there."

Use half-inch staple tacks to hold bits of gold or other plate together while soldering. Clamp them to place by means of flat nosed pliers.

In a recent *Photographic Times*, Dr. Rollins asks: "Do you know of a simplier developer ?" Which leads us to remark that a dentist can do almost anything.

For some reason not easily recalled, we failed to note in the January number the receipt, "as usual," of our friend Pierson's little pocket appointment book.

Dr. J. B. Mattison, of Brooklyn, offers a prize of $400 for the best paper on "Opium Addiction as related to Renal Diseases." The time limit is fixed at January 1, 1893.

If you are disposed to "gum in" your fillings, don't fail to hunt up Dr. Bronson's article, "Protective Lining of Cavities," before the N. Y. Odontological Society, in '79.

The organ grinders and peanut peddlers are not fully decided as to when they will humble New Orleans. As between heels and shotguns they seem to take more kindly to the former.

Williams, Brown & Earle, of Philadelphia, supply nutrient gelatine, agar-agar, etc., in tubes ready for inoculation, or in half pint flasks to those who prefer to tube it themselves.

Since the substitution of the fatted calf for the American eagle as the national emblem, even little Peru feels competent to clean out a few of our coast cities; and it wouldn't be a mean stoning either.

"We can lick the world," boasts the dress parade American. "Yes," says the man who believes in powder and ball rather than blab, "and a little piece of the world can make you do it."

James G. Blaine seems to be the only American of the day who has any sand in his make-up. The rest of us have no claim until fifty millions of dollars have been appropriated for naval and coast defense.

A leading member of the Rochester society insisted upon it at a recent meeting, in his efforts to depict a tooth on the board, that he could draw one better with a forcep than with chalk, and not a word of dissent was heard.

Keep your corundum wheels wet with water containing a few drops of alcohol. If they have become gummed, soak in a solution of caustic potash, afterwards washing in weak alcohol. The treatment is old, but none the worse on that account.

Put your gold plates, crowns, bridges, etc , direct from the fire or blaze, into an old newspaper, wrapping the paper quickly and closely about the mass. The piece will cool slowly, and in so doing rid you of all anxiety as to breakage during the cooling process.

We are indebted to Dr. Beers, of Montreal, for a copy of his address of last year, before the Royal College of Dental Surgeons. Like his every other effort it's chock full of good things. It has no "scare marks," but no doubt the boys shouted "hooray" many times more than once, during its delivery.

The reports of the Marine Biological Laboratory grow in interest with each issue. This institution is a summer school, but the hope is expressed that it may be soon placed in the same category with laboratories active the year round. Prof. C. O. Whilman continues as director.

Buffalo is about to part company with Dr. Roswell Park, one of America's most daring and successful surgeons, and whose influence in modern surgery as practiced in this country is only beginning to be felt. Rush Medical College, of Chicago, has called him to a responsible, and at the same time highly lucrative, position.

" Doctor, when can you re-fill this tooth for me."

" *Re*-fill it, did you say ?"

" Yes ; I've just had it filled, but the filling's good for nothing, and besides, I think the fellow *roasted* me."

This must be regarded as a valuable addition to the dental vocabulary.

A dentist fitting a gold crown let it fall into the lady's mouth.

" Don't swallow it, please."

" It's good coin, is it not, doctor ? "

" Certainly."

" Then ought it not to pass ? "

The dentist merely made a weather observation to the effect that the storm centre seemed to be moving a little north of east.

On the 10th day of March the Buffalo Dental Manufacturing Company was burned out " slick and clean," and two days later was dissolved, its affairs closed up, and a new company organized to continue the manufacture and sale of dental materials and laboratory apparatus in the name of the Buffalo Dental Supply and Manufacturing Company, under the ownership of Dr. Theo G. Lewis and Col. John E. Robie, Mr. Wm. Gram, Jr., and Mr. Charles O. Rother.

" Doctor, isn't it true that for every child a tooth ?"

" There's an old saying to that effect."

" Well, I lost one about the time my son George was born, and another when Ben came into the world, and now (the doctor had just decapitated an incisor preparatory to the setting of a crown) I've lost another."

"What has the loss of this one to do with the case?"

"This: that the saying holds good, for I've just heard of the birth of a grand-daughter."

Of all the deadly things that war
Against our peace and kill us,
The worst and deadliest foe by far.
As proved by the researches of scientific men in Germany, France and several towns in Michigan, who have made the matter a study, and found out by experimenting with guinea pigs and other cheap animals how to cure almost anything except warts and catarrh,
Is merely a bacillus.—*Chicago Tribune.*

The position of editor makes one more or less of a target for students in quest of situations and average practitioners in pursuit of professional information, and editors are by no means slow in at least acknowledging the compliment implied in such communications. But editors are not only impecunious but somewhat touchy as to the fitness of some things, wherefore it is suggested that all wishes and wants be accompanied by a stamped and directed envelope or postal card. It is a precious privilege to attend diligently to other people's business, but some of us very much dislike to pay for it.

Some intense fellow is trying to be fussy about the duty on microscopes and microscopical accessories, wants the duty cut down or taken off in the interests of medical science, forgetting that it would make about as much difference with science of any kind as would the placing on the free list of catgut for fiddle strings. The microscope is too small altogether to be permitted to interfere with so royal a trump as the McKinley tariff; it belongs high up among the luxuries and should be kept there. It is only when an American wishes somebody to give him something that he whines about the tariff.

THE

Odontographic Journal.

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TOLERANCE OF OSSEOUS TISSUE FOR FOREIGN BODIES.

[TRANSLATED FOR THE ODONTOGRAPHIC JOURNAL.]

Cummunication to the *Societeé d'Odontologie*, of Paris, at the session of Mar. 3, 1891, by M. A. Loup, demonstrator at *l'Ecole Dentaire*, of Paris:

At the last session, M. Goddon presented to us Dr. Dall's operation of fixing prosthetic appliances in the maxillaries by the aid of metallic pivots. Discussion of the process was put over until to-day, thus giving me the honor of reading before you a short essay upon the subject.

My aim is to throw light upon the various phenomena which take place in the bones from their appearance in the fœtus to their perfected development in the adult. Then, after having glanced at condensing osteitis, the formation of secondary tissue, we will examine Dall's method. The bones undergo considerable changes before becoming what we see them; they have passed through various phenomena, and a simple examination of the organism shows that they must progress through three successive stages before they can serve as the solid framework of the animal body. These three states are the mucous, the cartilaginous and the osseous.

The first state (mucous) is the period during which the bones are absolutely confounded with the environing parts, in a compact, homogeneous mass, of mucous appearance. Some writers, on the contrary, begin with the epoch when the bones are seen to begin to sketch themselves out in the soft parts, under the form of a point slightly more dense. Certainly that is but the beginning of the cartilaginous state. The former theory is the more plausible, and the only one admissible, for the bones are then only composed of cellular tissue and blood vessels. Nothing in the organism, in the mass of the individual, has received the stamp of what the parts are to be later on, the stamp of ossification, the trace of lime salts in those parts.

In the second state (cartilaginous), we have the scheme of the bones, and in an advanced period of cartilaginification the design is perfect, lacking only the density. Here again is divergence of opinion, many anatomists denying the absolute necessity of the cartilaginous state between the mucous and osseous tissues. Howschipp says that state only exists in the case of bones whose ossification is delayed. Certainly, in some bones, notably of the cranium, the cartilage is so transparent, while it presents but slight thickness, that this state could easily be misconceived; but it is none the less true that the cartilaginous state is intermediate between the mucous and the ossseous.

Several phenomena characterize the passage from the cartilaginous to the osseous. First the cartilage becomes denser; in place of its dirty white color it acquires a dark yellow hue; vacuoles appear, little cavities of an anatomical element or tissue, filled with gas or liquid; compared with the enclosing tissue, they appear empty. An osseous point makes its appearance among the red blood vessels which produce it; it is spongy and penetrated with blood; little by little it extends, and is more and more traversed by blood vessels.

If the bone be at this period examined, we find an osseous point surrounded by a red aureole, around that the cartilage, traversed by several blood vessels directing their course inward toward the point of ossification. It is probable that when the cartilage has attained its complete development, the nutritive vessels deposit, little by little, the lime phosphates which make them more dense, forming the osseous tissue properly so called. I do not think it admissible that the cartilage is reabsorbed progressively to give place to a harder tissue. As I said above, the cartilage presents quite the form of the bone which it is to become, and is certainly there only to serve as the woof, the web, for the calcareous materials about to be deposited, to be added at the osseous points which may be seen taking their beginnings in one or several places, according to what bone it may be, and extending themselves gradually in all directions, in all parts, by capillarity, at it were, and without overpassing the proper limits; as the prolongations of the odontoblastic cells surround themselves with calcareous substance to form dentine, and resemble a web, a sheaf of wheat which has been dipped in a calcareous bath.

The growth of bones goes on in yet another way; by juxtaposition, that is, by the successive application of new plates, formed at the expense of the deepest layers of the periosteum. This fact has been established by the experiments of Duhamel upon the composition of the bones.

The bone, when formed, presents, after removal of the periosteum, a generally smooth surface, only showing slight striation, a few little spines for the insertion of the muscles, or little openings for the nutritive vessels. But in transverse section the aspect is very different; the interior is made up of little cavities, where plates and fibres more or less fine intercept at intervals of variable dimensions, quite justifying the name given it of spongy tissue; while, as we go farther from the center, we find the cells smaller and smaller, then a well marked line of considerable thickness and density, especially at the extreme periphery, surrounding the spongy tissue; this is the external surface, the crust of the bone. In flat bones the exterior layers nearly unite at the centre, so that there is little or no spongy bone.

Wherever a nutritive vessel is to pass is a little canal, a bony sheath of protection (in the hard tissue much needed). The canal opens at the surface of the bone, and in all its detours its walls are pierced by small orifices like those of a very fine collender; these serve for the anastomosis of the vessels. Wherever there is an obstacle to the formation of bone, the calcareous constitutive elements surround the obstacle and condense themselves to a greater or less thickness, according to the vessel they are to protect, but always so as to give the sheath a smooth wall, and thus avoid roughness, which, especially in the spongy tissue, under the influence of a superactivity in the blood vessels which swells and shrinks them, would cause inflammation and even rupture by their interference.

From this cursory glance at osteogeny, we pass directly to the subject in hand by observing the phenomena occurring in irritated bone. In the osteitis, for example, produced in the bone by insertion of a foreign body, we see, beneath the easily removed periosteum, the osseous substance, red, granulating; this aspect is due to the enlargement of the Haversian canals (Decandin). Following one of these vessels into the interior of its canal, we find that the bony tissue has taken the appearance which it had in formation; the canal is enlarged, anfractuous, presenting lacunae (Howschipp's), in which are found osteoclasts or giant cells. There is resorption of the bony tissue.

Thus, in all the tissues, the first effect of inflammation is to produce an augmentation of vascularity. Under the influence of the inflammatory process, vascular canals are developed, filled with blood, giving to the inflamed bone the aspect of a rush (Geray). But in the bones this increased vascularity gives rise to a phenomenon not observed in the soft parts, namely, absorption of the tissue surrounding the vessels thus dilated. It is probable that this absorption of tissue around the inflamed Haversian canals only involves one of the elements of the bone. The inflammation determines the loss of the web, the cartilage, the part which is organic and consequently susceptible to decomposition.

As to the calcareous matter, does it repass into the blood vessels and become eliminated as useless matter? It may be that it remains there, despoiled of its organic part, simply as grains of phosphate and carbonate, ready to form the secondary tissue. This may be, provided the osteitis terminates by resolution and in the interior of the tissues, for it is evident that if the inflammation proceeds to suppuration, both the organic and inorganic matter will flow out with the pus.

When the osteitis is cured, the elements of the vascular marrow resume the aspect of osteoblasts and reform an epitheloid membrane, which will be the point of departure of the bony tissue.

The introduction into a bone of a neutral foreign body ought not to seem extraordinary when osteogeny is understood. Did not Duhamel do the same thing when, in order to learn the formation of bone, he placed a metal ring around one of the bones of an animal, which ring he found at the autopsy inside the tissue, and even within the medullary membrane? Are not encysted bullets analogous? What else did Martin of Lyons, in making appliances for buccal restoration with platinum screws in the bone, and artificial noses driven like a nail into the true nasal bone? Plenty of examples may be cited.

The organs essential to regeneration of bone tissue are the periosteum and the medullary membrane, and as accessory organs, all the soft parts surrounding the seat of inflammation. Troja thus describes the secondary tissue: "The membranes become more vascular, reddened, less resistant, thicker, detach themselves from the dead parts and secrete upon their adherent face a yellowish or reddish fluid, of a syrupy consistence. This is a gelatino-albuminous lymph, which condenses and soon becomes the seat of an osseous deposit, effected simultaneously at several isolated points. From each of these points go out needle-shaped fibres, few at first, but which multiply, and the new bone, spongy and reddish in the beginning, speedily becomes solid." The bone, being somewhat soft, moulds itself around all obstacles encountered ; the nutritive vessels are an example of this, since we find them in the cartilaginous tissue, and they are not encroached upon by condensation ; quite the reverse, the latter comes to reinforce, so to speak, the cartilaginous sheath which they had.

If, then, we place a metallic root in a bone, what is going to happen ? The bone will inflame, an osteitis will be the effect. Will it be always a condensing osteitis ? No, but often a rarefying osteitis. Upon what ground, then, ought we to base the trial of this operation ? The problem is difficult to solve.

Diathetic questions will, however, furnish valuable indices for the prognostic of the operation. Individuals attainted by serious diseases, the diabetic, the scrofulous, the rachitic, temperaments too lymphatic, the anaemic, haemophiles, etc., etc., and all who have any organic disease, are certainly subjects upon whom the operation should not be attempted, because of liability to failure, and still more, to rarefying osteitis, indeed to caries of the bone, and even necrosis. For it must not be forgotten that, with the subjects above cited, the slightest wound is often serious, and it takes very little to bring about suppuration.

This means that, while it is a beautiful operation, which ought to be of great service, it will not often succeed, but only in judicious cases.

In any case, the following phenomena will take place : The periosteum, as well as the medullary membrane, will be the seat of an intense irritation, terminating in the formation of a tissue resembling the embryonic marrow. This tissue will be the agent of formation or of destruction, according to the degree of irritation Evidently the degree of irritation will be regulated by the vital force of the individual ; the stronger the individual, the better the constitution, exempt from diathesis, the less the irritation. On the contrary, in the rachitic, accompanying the inflammation there will be but a feeble proportion of calcareous material for the nutritive vessels to oppose to the progress of destruction.

As nature gets the upper hand, the Haversian canals will be seen to diminish in diameter, and the reconstitution of the bone will proceed quietly in proportion as the vessels resume their normal state. Then the implanted root will be surrounded, upon the subsidence of the osteitis, by a yellowish secretion, which will gradually ossify, taking, as its anatomical character, the composition of exterior bone, that is to say, the part of the bone in contact with the root will resemble the external layer in its structure, it will be dense and smooth. I cannot do better than compare it to a piece of bread. Insert the root in the crust without piercing it, and you will have a *cul-de-eac* fórmed by the dense tissue, the soft part representing the spongy bone.

For my part, I think the operation very possible (in fact, it has already been done), provided always that the bone be not too long exposed to the air, for success depends upon that.

Dr. Dall is satisfied with making a hole in the bone, to serve as a sheath. I am not absolutely committed to the operation thus performed ; I think the pivot ought not to have the bone as its tube, because every movement of the piece would be a source of constant irritation, of inflammation and of resulting accidents. We should confine ourselves to the insertion of a tube taking the place of the root, a tube Godart, for example, but with deeper ridges, so as to have sufficient points of retention. This tube, closed at one end, will give metallic walls to the pivot, and its exterior edges, slightly spread and flattened upon the bone, will completely shut it from the air, especially with the mucous membrane, which will always recover that part of the tube. As M. Godon showed, at the last session, a screw may be used of the size of a cylindrical root, in the center of which is a hole for the pivot. This system presents the great advantage of being solid at once, permitting the formation of secondary tissue without the aid of thread or appliances for retaining it. It will be especially applicable immediately following the extraction of a tooth, but when the object is to implant directly in the bone, the little tube mentioned above will be preferable, as it will suffice for a screw the size of the tube, which will be screwed into the canal thus made.

In June, 1890, I performed this operation at the clinic of the *Ecole Dentaire*, but I did not succeed. I worked under bad conditions ; I was obliged to extract the root piecemeal, the external wall of the alveolus was destroyed, so that the chances were small. I made a platinum root, a kind of flattened horn, with some anfractrosities upon the sides to be enveloped by the secondary tissue, then I held it in place by threads attached to the other teeth. Five days after I had not obtained the least solidity, but at least, there was no local or general derangement, no fever, no pus. I removed it. I do not acknowledge myself beaten, and I have been constantly proposing to repeat the experiment, but either from lack of time or a little negligence, I have not done so.

Without exactly comparing vegetables to animals, ligueous to osseous tissue, we can, in the strictly mechanical point of view of nutrition, of the formation of the being, establish a certain analogy. For, if we eat to furnish our blood vessels with the materials necessary to life, the vegetables draw their nourishment, by means of their vessels, in the earth. If a wound be made in the trunk of a shrub, and a piece of wood introduced to maintain the separation, what happens? If the parts be covered with rich earth, to exclude the air, an irritation has been provoked, which will end in the formation of new tissue, similar in all respects to the general tissue, the nutritive vessels will pass around the wound, the circulation be reestablished, and at the end of a certain time, an elongated O will be formed in the centre of the tree.

Compare the outside bark of the tree to the dense tissue of the bone, the liber to the spongy tissue, and by a coarse but true comparison, it can be seen how bone comports itself when confronted by an obstacle.—*L'Odontologie.*

ANTISEPTICS.

[Translated for the Odontographic Journal.]

The *Aerztliche Vereinsblatt*, organ of the German Aerztveriensbund, contained in its October number a report, well worth reading, of discussions in the Medical Society of Munich, Feb. 5 and March 5, 1890, upon recent improvements in medical practice and their effect upon the medical situation.

Staff Surgeon Dr. Seydel said:

"In the eloquent words which I shall quote from the Herr Professor Dr. Ungerer, I wish to speak of a subject which deserves consideration in accordance with the spirit of the time, namely: the antiseptic treatment of wounds.

"Of the 'original Lister dressing,' the course of two decades has left, properly speaking, little remaining. We have been practicing antiseptic, then antimycetic or antiparasitic treatment of wounds, and have, at the present time, attained the ideal of the latter in the sterilizing methods; we have thus gone back to the maxim from which Lister departed (or more correctly, the German Dr. Semelweiss [Jäger]), 'Let wounds alone.' In the intervening period come the various methods: 'Healing under the dry and the moist crust,' 'second intention,' the invention of an infinite number of materials for bandages, and the recommendation of over 300 antiseptics.

"I wish to take this opportunity to invite your careful attention to two points recently agitated: Sanger has shown that every antiseptic, whatever its composition, produces, by prolonged use, changes in the kidneys (diminished secretion) and in the liver. We cannot, therefore, be too careful with our antiseptics. On the other hand, Nizze has proved, by many personal experiments, that blood in a fresh condition possesses an enormous antibacterial force. How easily, then, may we check and reduce this disinfective force of the blood by the profuse application of antiseptics!"

[At an oral demonstration in Berlin, Dr. Bergmann used in his clinic for wounds only sterilized solution of common salt, and rejected all antiseptics. O, the loved, the brave, where are they all?]—*Zahntechnische Reform.*

HOMICIDE THROUGH IMPRUDENCE.

[TRANSLATED FOR THE ODONTOGRAPHIC JOURNAL.]

The following is from the St. Quentin correspondent of *Le Temps*, Paris:

Doctor Millot, of Montécouré (North), has just appeared before the tribunal of St. Quentin as guilty of homicide through imprudence. Having been called to Madamoiselle Doulet, aged twenty, receiver of the mail at Beaurevoir (Aisne), attacked with a violent toothache, he prescribed a cachet of aconite. Scarcely had the poor girl swallowed the medicine when she was taken with terrible colic. This critical condition lasted several days. and the night following, Mlle. Doulet succumbed.

The medical jurisconsult, who conducted the autopsy, pronounced it a case of aconite poisoning. The public prosecutor at first thought a mistake had been made by the apothecary, but after a chemical examination of the viscera, he directed proceedings against Dr. Millot.

At the trial, Professor Brouardel stated that the question of dosing with aconite was not yet fully decided; that in any case, according to the dispensatory, only crystallized aconite should be used. "There is," he said, "some confusion in the preparation, and consequently an enormous danger, a danger to which I shall make it my duty to again call the attention of the Academy of Medicine upon leaving this room."

The doctor was fined 100 francs.

The *Bulletin médical* gives some additional notes, and says that the formula was as follows :

Aconite, - -	1 milligramme.
Antipyrine, - -	50 centigrammes.
Two powders.	

Without specifying whether crystallized aconite should be used or not.

The apothecary, having no scales which would weigh a milligramme, weighed a centigramme, which he divided into ten powders, a thing which is often done, right or wrong, we hasten to say.

Death having been recognized as due to aconite, our confrère was on this condition convicted, in spite of M. Brouardel's declaration that the question of dosing with aconite is not yet fully decided ; that in any case, according to the dispensatory, only crystallized aconite should be used.—*L'Odontologie.*

BROMATHYL IN A BERLIN COURT OF JUSTICE.

[TRANSLATED FOR THE ODONTOGRAPHIC JOURNAL.]

The employment of Bromathyl as an anæsthetic has been under discussion in the court of justice of Berlin, where Hermann Lademan, an esteemed practitioner of the healing art, was arraigned upon the charge of carelessly inflicting bodily injury. In November, 1889, the sculptor Steinmann, with his wife, visited the office of the accused. Frau Steinmann was suffering from toothache, and asked to be relieved of the ailing tooth with the aid of an anæsthetic, but not gas. Lademann obtained from the drug establishment of Braumüller, 100 grains of Bromathyl, and proceeded to narcotize the patient after asking her the prescribed questions as to whether she was subject to any heart trouble, etc.; giving Steinmann a folded white handkerchief, with instruction to hold it over the mouth and nostrils of his wife, while she was to draw deep inspirations and count slowly. The accused then dropped some liquid from a bottle upon the handkerchief. Frau Steinmann counted over one hundred ; the attempt failed. After a short pause the experiment was again tried, and this time Frau Steinmann complained that the liquid flowed into her mouth and windpipe, producing a burning sensation. The experiment was again broken off, and finally all concerned desisted from further trials, and the tooth was extracted without narcosis. Frau Steinmann was seized with violent vomiting, and was obliged to take to bed immediately upon getting home. New symptoms followed; the struggling breath of the patient smelled of Bromathyl, and as Frau Steinman was released by death from frightful suffering, the third day after the attempt at anæsthetizing, the physicians were of the opinion that here was presented a case of poisoning.

The court chemist, Dr Bichoff, who analyzed the liquid, said that it was not the innoxious Bromathyl with which he had to do, but the chemically related, but highly poisonous Bromäthylen; that they must have been interchanged at the druggist's. The entire stock of Bromathyl in possession of the firm of Braumüller was examined, and it was disclosed that onlv pure Bromathyl was in stock. The investigation was extended to the manufactory of Merck in Darmstadt, who had furnished the liquid; here it was stated that both preparations were indeed produced, but under such supervision and subject to such precautionary rules that interchange seemed an impossibility. They were thus confronted by an enigma, and it has not yet been solved.

The accused deposed that, naturally acting upon the supposition that he was using Bromathyl, he had taken all the precautions of the usually prescribed directions. The court, notwithstanding, made several grounds for reproof. In the first place, he ought to have called a physician in counsel, as should be done in every case of narcosis. Moreover, he had administered too large a dose of the supposed Bromathyl, and had continued the attempt for too iong a time. The expert medical counsellor, Dr. Long, gave the opinion that Frau Steinman died, without doubt, as the result of Bromathylen poisoning.

The court attorney set forth that the accused must have been called to account for homicide through carelessness, if the still unexplained accident of the interchange of the two materials had not come to light in his defense. Thus much was in evidence, however, namely, that the accused had, by carelessness, injured the health of Frau Steinman. The court concurred in this opinion, and sentenced the accused to two weeks' imprisonment, which penalty was considered to have been suffered by his detention during the trial.—*Zahntechnische Reform.*

THE RELATION OF BACTERIA TO THE FORMATION OF PUS.

The mycotic origin of pus was definitely settled by Ogsten in 1881, though Klebs, years before, had come to the same conclusion.

To-day we recognize as pus formers—

First.—Staphylococcus pyogenes aureus.

Second.—Staphylococcus pyogenes albus.

Third.—Staphylococcus pyogenes citreus.

Fourth.—Streptococcus pyogenes.

Fifth.—Bacillus pyogenes fetidus.

Sixth.—Gonococcus of Neisser.

Seventh.—Micrococcus tetragenus.

And as rarer forms the *staphylococcus pyogenes cereus albus* and *cereus flavus*, and *staphylococcus pyogenes flavescens*. By some observers the *bacillus pyocyaneus* is also regarded as a pus former.

The *bacillus tuberculosis* does *not* belong to this class. Of these, by far the most frequently met with are the *staphylococci aureus* and *albus*, the *streptococcus pyogenes* and the *gonococcus*.

The question immediately arises: Can the formation of pus be caused by other substances than the foregoing microörganisms?

There seems to be but two possible ways in which this might occur; either from other microörganisms as yet unknown or not settled as having this pus-forming property or from chemicals.

That pus may be formed by chemical action on the tissues has been determined; thus, croton oil, metallic mercury, or turpentine, rendered sterile, placed in sterilized glass tears, and these by an aseptic operation made to heal in under the skin of animals, will there remain inactive as long as the tear is unbroken; but, however, on breaking the tear, pus is formed, in small quantities it is true, yet, chemically and microscopically, pus. Clinically, this pus can hardly be said to occur, for it is a sterile pus, does not contain a single microörganism, and does not tend to invade the tissues.

Grawitz and de Bary have gone one step further, and have produced pus by the subcutaneous application of the toxalbumins derived from the pus formers themselves. The ptomaines were obtained from pure cultures and rendered perfectly sterile.

This, of course, is but another example of chemical irritants producing pus, but is of much more significance than the action of croton oil, for it explains how the pus formers do their work. The microörganisms generate the ptomaines, and the ptomaines, by their chemical action on the tissues cause the formation of the pus.

That the microörganisms are the true and specific cause of suppuration, is proven beyond a doubt. The chain of evidence is complete. All infectious pus contains bacteria which have been cultivated, through many generations, outside the body, in pure cultures, and on inoculation with these pure cultures pus has again been formed, and the same germs found in the pus so formed.

On man these inoculations have been performed by Garré, who rubbed a quantity of a pure culture of the staphylococcus aureus into the skin of his forearm, and it took weeks for the resulting carbuncle to heal.

Some inoculation experiments have failed, owing to some error in the technique, using too small a number of germs, or those which, from abnormal conditions in which they are grown outside the body, had lost their virulence.

At other times abscesses have been found which contained none of the pus formers. These are almost invariably "tubercular abscesses;" when not, it is highly probable that a portion of the pus was selected in which all the germs had died—killed by their own secretions.

As a rule, the infections due to the *streptococcus pyogenes* are more serious than those due to the *staphylococcus*. This is probably because the former tends to spread along the lymph spaces, to involve more area and show less tendency to become limited.—EVANS, (C. S.), *Buffalo Medical and Surgical Journal.*

PLASTIC MATERIALS IN THE PREPARATORY TREATMENT OF TEETH.

In the whole scope of the practice of oristry, perhaps, there is no subject that more constantly presents itself than the need of avoidance of pain, together with the preservation of vitality in the organs to which the larger part of our attention is given.

Preparatory treatment of living teeth, of which only I shall speak, may be advisable in two classes of cases,—one where the pulp is endangered but not exposed, for the purpose of pulp protection, by arrest of caries and favoring deposit of secondary dentine; and in another class, where the dentine is too sensitive to permit, without discomfort, the proper preparation of cavities for permanent filling.

I will briefly mention how I first came to devise a plan for the treatment of the former class of cases, and which resulted in an adaptation for the treatment of the second class.

About the year 1850, and during my early practice with Dr. Keep, many useful teeth that were too frail to bear hard metallic fillings, instead of being doomed to extraction, were filled in various extemporized ways, to render them comfortable while they might last.

A material called Hill's stopping, coming forward about that time, was somewhat used, but, being a mixture of sulphate of lime with gutta percha, it would become rough or fuzzy in the mouth ; also being patented was considered an obstacle to its free use. So oxide of tin, with a little fine spar, was mixed with gutta percha, which made quite a solid and comparatively durable stopping. But it had a serious objection in that it became discolored and often discolored the tooth substance.

Thinking over the matter frequently, it occurred to me one day that oxide of zinc might be free from these objections, and on trial I found it to be the fact.

As it was common then to take pride in exclusive knowledge, I kept the secret to myself for some time, only loaning it to two students, one of whom gave it the name of "dentron." They derived some income by making and selling it to Codman & Shurtleff, who found a ready sale for it. When those students came to have no further occasion for that resource, I told the before-named firm of its composition, and they then began to make it for themselves. And being then freely spoken of, knowledge of the composition gradually became more general, and other dealers made it.

To resume. While using the tin combination I noticed, on removing the old stoppings for renewal, that the dentine had become hardened as well as discolored, and pulps that were before almost exposed were found protected by a firm covering of secondary dentine ; and the thought came to me, why could not a plan of treatment be adopted for the purpose of favoring this corrective and conservative action ?

I reasoned that the morbid conditions in the cavity must first be corrected, and then held in suppression to allow nature to carry out her protective efforts. Those morbific elements seemed to be fermentive and acid action. We knew nothing of microbes then, and what was the acid I knew not, but Dr. Miller has since informed us that it is mainly lactic.

To correct the fermentive process I saturated the cavity, after slight excavations, with a solution of chloride calcis, and to neutralize directly the acid, I used simple aqua calcis, each of which produced the desired effect.

But then the point was, how to place and hold the mischievous agents in subjection without irritating or destroying the subjacent vital tissues on which depended the renewed protection.

To accomplish this, there then seemed to be nothing better at hand than creosote ; but that used pure would be too caustic, so I diluted it largely, and saturated the cavity with the weak solution, and sealed it up ; but how ? I reasoned that the interior of a tooth, even in health, being softer and more elastic than other parts of it, something of a similar lack of density, as well as non-conductivity, should occupy the depth of the cavity.

Even the gutta percha stopping would be too solid for some cases ; and for them I mixed beeswax with it for the deeper layer, covering it with the firmer material. I also found that a bedding of oxide of zinc or of sulphate of lime mixed with the mild antiseptic answered the purpose admirably.

These corrective applications were repeated at intervals varying with the apparent needs of the cases.

I made a brief mention of this plan in the *American Journal of Dental Science*, in 1858.

In the course of time other antiseptics have been added to our armamentarium, giving greater variety of facilities in this line.

The principle of this plan of treatment that I have described is to destroy the morbific agents in the cavity, and keep it aseptic without destroying the living tissues, or so irritating them as to endanger destructive inflammation. And during all the years of practice on this principle, patiently followed, I have found its results successful, even beyond my early expectation. It sometimes seems to require almost an unreasonable amount of patience, but we must learn to wait on nature, or she will not help us.

In regard to corrective applications, how often are caustics or irritants used, perhaps with the idea that the strength of the corrective will insure the duration of its effect, without considering that it may, as it often does, destroy the desired vital protective action.

And in relation to the relative density of interior dentine to the rest of the tooth, how often do we find an endangered pulp struggling in its minute pulsations against an unyielding phosphate stopping that lies almost or quite in contact with it ?

And still further, how often have we seen a hard filling of malleted gold or of analgam, in a deep cavity, supposed to be safe, but by its relentless presence provoking rebellious inflammation and death of the pulp.

In following up the treatment for endangered pulps, it was readily observed that the marginal dentine also was obtunded, and often only by the presence of the plastic stopping, though the calcic saturation seemed to be a positive aid.

And this manner of obtunding extremely sensitive dentine in preparation for permanent filling I cannot but think preferable to the way of merely putting the fibrils to sleep, from which to wake and find themselves imposed upon by a rigid and temperature-conducting foreign substance, provoking them to neuralgic protests.—WILLIAMS, (J. L.), *International Dental Journal.*

DENTAL SOCIETY OF THE STATE OF NEW YORK TWENTY-THIRD ANNUAL SESSION.

SKETCH OF DOINGS.—BJONES DESMITH.

FIRST DAY—MORNING SESSION.

The meeting was called to order by President Walker, the Rev. Dr. Hite invoking the divine blessing.

The roll was called by the Secretary, an unusually large number of members answering to their names. The minutes of the last session of the meeting of '90 were approved as read by Secretary Van Woert.

Dr. Baxter, Chairman, said that arrangements had been made with the Delevan House for a reduction of rates, and for the use of a room by the Board of Censors free of charge; also that the lecture room of the Young Men's Christian Association had been secured for the purposes of the present meeting.

A recess was taken for the reception of members and payment of dues.

President Walker then delivered his Annual Address.

Treasurer Mirick presented his annual report, showing the receipts for the year, $1,119.27; disbursements, $979.12; balance, $140.15.

A supplemental report gave the names of those in arrears up to May 12. 1891.

The President appointed Drs. Jarvies, Straw and Barrett a committee to draft resolutions on the death of Dr. Atkinson.

He also appointed as Committee on By-Laws, Drs. Van Vleck, Starr and Dean.

Dr. Straw, of the Committee on Ethics, reported "Nothing."

The Committee on Prize Essays said there had been no essays presented to the committee.

ABOUT LAW.

Dr. Carr, of the Committee on Law, presented an elaborate report of the work of his committee.

Dr. Barrett characterized it as a most extraordinary report—the labor accomplished, the increased respect for our dental law, and the effect on offenders against it. They had a law which was one of the best; the committee had seen it sustained, advanced money when necessary, paid bills when presented, to the amount of about $1,700. What was to be their answer? Should they uphold the committee in this extraordinary work, paid for from their own pocket that the law might be sustained? There was no more important work before the Society. He was a great stickler for scientific work, but here was a debt of both cash and honor, that should be paid the committee that had advanced it in good faith, in furtherance of the interests of the profession; the matter should be referred, with instructions to designate an hour for its consideration.

Dr. Straw did not see why that was not the very best time to discuss the subject, when all felt the importance of it.

After some further consideration it was decided to dispose of the subject then.

Dr. Barrett opened the discussion. If they were to be respected as a profession, they must respect themselves. The man who had no regard for his own reputation, nor for that of his associates, who would not do everything possible to build up that reputation, and keep it unsullied, could not respect his fellow men, nor could he have their's in return. Engaged in a great work, it was incumbent upon him that he secure proper respect for that work. The enforcement of the dental law in this State was a great work. Their committee had advanced the money necessary to the prosecution of this work, and the results had been gratifying. It had been urged that all cases had not been considered. True. They had been careful to select cases not subject to defeat, as a single defeat might work the destruction of the law. Law makers assumed to know what was wanted better than they did. At every session, bills had been forwarded under false designations, that, if passed, would have defeated laws then in force; and their committee had come to the Legislature repeatedly, and found bills so far advanced that the laws were in danger of defeat. If the law was to stand and be enforced, it would cost money. He was ashamed to think the committee had been paying out money for him, and he wanted to pay his share then and there. It was not reputable that the Society allow it to continue longer. The Treasurer reported our receipts inadequate. Now, what should they do to reimburse the committee ? He wanted it paid. He had urged it in his local society and others, but a pitiful sum only had been secured. The censors had raised some, but not enough. He was willing to head the list with ten dollars. He had paid before, but wanted to pay again, because he didn't want anybody else to pay for him.

Dr. Straw went down for ten dollars.

Dr. Brockway then took the floor. He had never been in sympathy with this law; he was too much in favor of individual independence to be strongly attracted to any law that attempted to interfere with such independence. At the same time, he had never openly opposed it, and did not then, he simply rose to oppose this method of relieving themselves of difficulties in which they had become involved. The State Society had committed itself to the enforcement of this law ; by the action of its agents the law had been passed ; its enforcement had been attempted, with what degree of success they all knew. He was willing to grant the committee his deep admiration for their earnest and self-sacrificing efforts, but did not believe in attempting to raise money in the way suggested, and for this reason, that inasmuch as the Society, as a body, was committed to this work, the Society should see the committee through, and every individual member made to bear his proportionate share. He did not believe in calling for individual subscriptions to do the work of this body. He was perfectly willing to pay his share towards the raising of the $1,700, but would not give a cent as an individual. If the Society would levy an assessment equally upon all the members, he would pay with cheerfulness.

Dr. Curtis thought an assessment could be made, and the indebtedness cancelled in that way.

Dr. Mirick did not think they had power to levy an assessment.

Dr. Jarvie endorsed every word by Dr. Brockway in regard to the zeal and efforts of the committee, and every word by Dr. Barrett as to enforcing the law and the necessity of paying the sum due the committee, but did not like the methods proposed for raising this money. The burden would come upon the few. He did not thlnk it wise, even if constitutional, to levy an assessment upon members ; the burden ought to be borne by the profession at large, throughout the State. He believed the scheme which had been adopted on paper the year before, the best one yet heard of.

He believed every member of the profession of this State could be reached through the district censors ; that by means of a properly worded circular, they could get more than in any other way, and it would be more equitably divided. He did not see how the Society could pay $1,700, because when the debts of that meeting had been paid, there would be no money in the treasury. They could not raise $1,700 in this room ; they might raise $200, and even then, some would have paid more than their share. He wanted to revive the scheme of the previous meeting, supplemented by a properly worded circular.

Dr. Butler thought the non-appreciation shown by the profession in regard to the work of this committee, was due to the fact that few of the dentists throughout the State attended these meetings—that they were ignorant of what the Law Committee had done or was doing. It came to them from every direction that the Law Committee was doing nothing ; that men were practicing everywhere in open violation of the law. It seemed to him if the report of this committee could be printed and accompany the proposed circular, these gentlemen would be more likely to understand what the committee had been about.

Dr. French thought it pretty well understood that they could not depend upon subscriptions from dentists or other Christian gentlemen. The year before, the report of the Committee on Law had been sent to all dentists in the State. He had sent out one hundred himself, receiving in reply the munificent sum of six dollars.

Dr. Jarvie said his idea was to subdivide the State very much more than by leaving it with the State board of censors. He would have the censors of each district appoint one or two men in every county, so that every man would be reached.

Dr. Barrett said that was exactly what had been done. He very much wanted to know how much money had been received in that way.

Dr. Brockway was of the opinion that more money could be raised by asking a small sum from every one than by leaveing it to voluntary subscription; because it was a fact, that only a small proportion of community was willing to give anything when left to their own discretion ; but if each one were asked for a small amount, they were likely to get much more. He thought if a sum not exceeding one dollar were asked from each one, they would get twice as much as if it were left to individual subscription.

Dr. Straw said if this thing was relegated to a few dentists throughout the State, they would simply raise nothing, unless subcommittees were appointed, with instructions to interview everybody in each county or town. At dollar subscriptions, he could raise three dollars in the city of Newburgh, and not another cent. He was willing to give ten dollars himself. They could raise a great deal if members felt as Dr. Barrett and he did.

Dr. Holmes had listened with great interest to the discussion, but did not think they could arrive at any practical conclusions. Members might contribute whatever they could afford, and then, perhaps, the plan suggested in relation to the district societies might be carried out. They would utterly fail to raise sufficient among the members. At the Sixth district meeting a resolution had been passed, putting the whole matter into the hands of the censors of the district, in the hope of reaching every dentist in that district, and raising what money they could. The Sixth district expected to do something. They needed ready funds, and whatever might be contributed then would be so much in hand, and they could ask the profession outside afterwards.

The President named as a committee to solicit subscriptions, Drs. Straw, Barrett and Curtis, the Society taking a recess of ten minutes, to permit the committee to act.

Dr. Jarvie believed the invitation should be extended to every dentist in the State to subscribe, and thought if a proper circular were formulated, showing just what had been done, every dentist would respond. He moved a committee of three, to formulate a circular to be sent to the State censor in each district, instructing him to appoint one or more men in his county to see each dentist personally, if possible, otherwise to send him a circular. The motion was carried unanimously.

Dr. Curtis said that several outside of the Society had subscribed.

Dr. Jackson, of the Business Committee, said papers would be read by Drs. Shepard, of Boston, Abbott, of New York, Kirk, of Philadelphia, Pierce, of Philadelphia, and Line, of Rochester; that Photo-micrographs, by Dr. Miller, of Berlin, would be shown; that it had been decided to have no public clinics; that during the session, Dr. Crouse, of Chicago, would enumerate the advantages to be derived from membership in the Dental Protective Association; that the committee had engaged Mr. Lansing, of Rochester, as stenographer, for which he was to receive his annual fee of sixty-eight dollars and fifty cents.

The Committee on Subscriptions to pay the indebtness of the Society to the Law Committee asked for further time, reporting, "to date," the following: received by Dr. Barrett, $50.00; Dr. Straw, $85.00; Dr. Curtis, $50.00.

Dr. Van Woert, of the Publication Committee, reported that the proceedings had been in shape some time, and would have been published but for insufficient funds in the treasury, and recommended that one of the papers of the meeting in question, and the discussion following, be thrown out.

Dr. Barrett said this rested with the committee; they could put in or omit what they thought best, unless specifically directed by vote of the Society. He had served a number of years on this committee, and knew that they had cut and slashed to their hearts' content.

Dr. Jarvie thought that might be the proper thing, so far as discussions were concerned, but when it came to papers, he questioned the power of the committee to ignore them or leave them out.

Dr. Straw's motion to squelch the paper and discussion under consideration was carried.

President Walker then conferred the degree of "Master of Dental Surgery on the gentlemen who had been found by the Board of Censors, "worthy and well qualified." We give his remarks entire, and in his own words.

GENTLEMEN—I congratulate you upon having successfully completed your examinations before our Board of Censors. You are chartered by this Dental Society of the State of New York to go forth in this State with its full honors upon you, to enter the broad field of labor in which you have chosen to act. You are enjoined to exert your best energies and your skill to alleuiate suffering mankind, to arrest the processes of time and stay the encroaching and subverting element. What a rich commission! What a noble work lies before you!

Our profession, when properly and honorably conducted, is a noble one. It becomes you to dignify it. This degree will avail you nothing unless your future life shall prove you are in every way equal to it. You should do more than this; strive to be superior to it, elevate and exalt it, so when future aspirants shall knock at the door through which you have just been permitted to pass, they shall realize that it is no mean ordeal that awaits them.

And now, as President of the Dental Society of the State of New York, and by the power in me vested, I confer upon you the degree of M. D. S.—Master of Dental Surgery—with all its rights and privileges, and subject to its many responsibilities.

On motion of Dr. Jarvie, the report of the Board of Censors, as presented by Dr. French, was received and its recommendations adopted.

Dr. S. C. G. Watkins invited, by letter, the members of the Society to the annual meeting of the Society of New Jersey.

The reports of the eight District Societies showed them in flourishing condition, with the usual exception or two.

The Dental Colleges failed to send their reports in season to be read.

The President appointed the Board of Censors a committee to nominate permanent members.

The Society took a recess until 2:30 p. m.

AFTERNOON SESSION.

The Society was called to order by President Walker.

Dr. Charles F. Ives, of New York, resigned his membership, the Society losing in him a most excellent member.

President Walker appointed as a committee to formulate the circular letter to dentists throughout the State, Drs. Carr, Jarvie and Butler.

Correspondent Ottolegui said he had nothing to present as correspondent, further than what would appear in the report of the Committee on Practice. As chairman of that committee, he made a most elaborate report, illustrating parts of the same by means of finely executed colored drawings.

Dr. Kirk, in the course of the discussion, said the behavior of copper amalgam was at times "very, very good," and at other times "horrid." In some cases it had preserved teeth, in others it had not; but as they had had success with it in some cases, they should try to get at the causes of failure. All methods of preparing copper amalgam were involved in the precipitating of it upon metallic zinc or iron and washing with mercury. Much of the copper amalgam made in that way was apt to become oxidized. He had therefore prepared copper amalgam for his own use by making mercury one of the electrodes and depositing the copper directly into it.

With regard to implantation, his experience had been closely related to that with copper amalgam. He had implanted a number, and with varying success. Some years before he had implanted a lateral incisor from the mouth of a young lady—a beautiful tooth, and such as he would call good for the case. He had done it in the ordinary way. He had never failed to get union ; union took place in this case rapidly. Within six months the tooth had been lost by absorption of the root. He had also implanted an old tooth that had been knocking about his case for years; that had proved a success. This led him to look over the character of the teeth he had used, and he found that he had invariably selected bright and handsome teeth from the mouths of his younger irregularity patients. He then resorted old teeth, and with better success. The explanation was a rational one. The odontoblast and odontoclast had different functions to perform, and acted differently under different circumstances. He had explained to himself certain differences in these young and old teeth in this way: When they introduce into productive tissue a foreign body, as a juvenile tooth, action was set up to remove it, and the odontoclast worked in that direction; but if it were of fine mechanical texture, as in an adult, and could not be readily removed, nature would endeavor to retain it. He thought it was simply a question of selection of teeth, teeth that the odontoclast could not remove; a question of solubility of the root. He closed with a word of warning in regard to objections to scientific operations, holding that while it was wise to go slow in doubtful operations, there should be some substantial basis for objections raised against them,

Dr. Pierce said the question had arisen some days before with a chemist friend, whether copper amalgam was antiseptic because it disintegrated. In the proportion that the amalgam disintegrated under the influence of the secretions, in that proportion would it prove antiseptic, restraining progress of caries around its borders. In his own practice a large proportion of those fillings extending under the gum had disintegrated to that extent that the tooth decayed.

Out of eight or ten cases of implantation he had had two where the socket was made de novo and the tooth placed in it that were satisfactory. In the case of a gentleman sixty years of age who had lost a lateral incisor, the third attempt proved successful at least it was still satisfactory at the end of two years.

He had taken teeth out to treated abcesses. In these there had been no disturbance. He had taken out the tooth in one case, scraped and cleansed it thoroughly, washed the socket with zinc chloride, ten to fifteen grains to the ounce, and then replaced the tooth; it had been in four years. Before replacing the tooth he had taken the pulp out at the apical end, filling with gutta-percha. He had treated several cases in that way without failure; there had been no tendency toward absorption. He could only explain it by the fact that there was perfect adaptation of the tooth to the socket; perfect correspondence between the nature of the tooth and its surroundings; there was no difference in the local conditions under which the tooth had matured. He had been surprised that cases of implantation had not been more successful; but thought the explanation by Dr. Kirk, that there was want of harmony between the individual and the tooth, the correct one; that lack of harmony had its influence.

Dr. Barrett confirmed by his own experience what Dr. Pierce had said about extraction for abcesses He had had two cases, then fifteen years in service, of abcessed teeth extracted and replanted.

Dr. Guilford considered himself fortunate in not having done a great deal of implantating of teeth.

In regard to copper amalgam, he had not used it to the extent that others had, and he considered himself fortunate in that also. In regard to what had been said about enamel margins, it seemed to him that individuals were disposed to grasp a truth and then magnify it unduly; they started with a proposition eminently correct, but carried it too far. The idea of enlarging a small proximal cavity in an incisor so as to take in sufficient surface to prevent further decay, he could not endorse. There were several things to be considered; if at all, they usually had decay very early in life, and no one would undertake to fill them with gold He preferred to fill with gutta-percha until the tooth had become harder, then with gold. A small cavity could be filled with gold and the filling last many years in a majority of cases; when that became defective they could refill with very little enlargement. If they anticipated decay and made the cavity larger than necessary, they carried their anticipations too far into the future. They should remember the future wear of the tooth; the hardening of the crown; the improved condition of the child; the better care of the teeth. They all knew the importance of making a cavity large enough, and taking advantage of every step to make a "perfect filling;" and then they knew, too, that when all that had been done, decay might come; that however could be attended to afterwards. He did not think it advisable to enlarge a cavity unduly, at the same time they often neglected to enlarged enough at the start.

Dr. Ottolengui thought an old tooth better than a young one in implantation. He advised against teeth that had cracks in the enamel. He then closed the discussion of one of the ablest reports on practice ever made to the Society.

Dr. Crouse, of Chicago, addressed the Society on the subject of the Dental Protective Association, setting forth in his inimitable way the many advantages to be derived from membership in the association, expressing the hope that every able-bodied member of the State Society would permit himself to be gathered into the fold. He also informed them that the law-suit with the Tooth Crown Company had been decided by the U. S. Supreme Court in favor of the dentists—"all on account of" the Protective Association.

Dr. Kirk then read a paper on "The Dental uses of Aristol," the discussion of which was participated in by Drs. Pierce, Barrett, Guilford and Wiggins. The consensus of opinion was that in aristol the profession had something of permanent value. Special attention should be called to the fact that "Aristol" is simply the proprietary name, patented at that, of "thymol-iodide." Under this latter name, which is strictly chemical, Bullock & Crenshaw, of Philadelphia, have had this article on the market for sometime, and at a much reduced figure. The difference in price is what you pay somebody abroad for giving a chemical compound an outlandish name. Another case of pyoktanin at a dollar a pound or aniline dyestuff at ten cents a packet. Buy "Aristol" as "thymol-iodide.

Dr. Kirk's able paper and the discussion of it appear in full in the *Dental Cosmos* for the current month.

The Society took a recess till eight o'clock P. M.

FIRST DAY—EVENING SESSION.

The following preamble and resolution, substantially as offered by Dr. Jarvie, were adopted :

In view of the fact that the suit in the Supreme Court of the United States, involving the Richmond Crown, had been won by the Dental Protective Association, decided in favor of the dentists, against the International Tooth Crown Company :

Resolved, That the Dental Society of the State of New York request the Association to extend the time, then limited to May 15th, at least thirty days, that all dentists who had not joined might have an opportunity to do so before final closing of the doors.

Dr. French said he had had printed an iron-clad oath that each of the successful candidates for the "M. D. S." were obliged to subscribe to ; among other things, that they would abide by the Code of Ethics of the Society ; but in the codification of the law the Code had been omitted He thought something should be done.

Dr. Carr's motion that the Code of the American Dental Association be made that of the State Society was adopted.

It was resolved that 500 copies of the Code be printed for the Society.

Dr. French asked the Society to instruct the Board of Censors, as a committee on nominations for permanent membership, to fill vacancies. The committee was so instructed.

INCIDENTS OF OFFICE PRACTICE.

Dr. McDougall exhibited two teeth that he had extracted at one pull—a third and second molar.

Dr. England presented a tooth with an unusual amount of calcarious deposit upon it.

Dr. M. L. Rhein exhibited a small bridge with detached teeth. Constructed in this way, the teeth were not subject to breakage in soldering, and in addition it could be readily repaired.

Dr. Green had hastily repaired a bridge with amalgam. Subsequently the whole front dropped out—a case of salivation.

Dr. Evans said the bridge presented by Dr. Rhein was not new, that the mechanical principles involved had been published time and again.

Dr. Curtis said in behalf of Dr. Rhein that Dr. Evans had misunderstood him, that that gentlemen had stated definitely that there was nothing original in it. He had given credit to the proper parties, Dr. Van Woert and the speaker

Dr. Evans said credit should also have been given Dr. Parr.

After a little more sparring between the principals the subject was dropped.

Dr. Shepard, of Boston, presented an elaborate paper on "Education and Legislation." With the full and free discussion by representative men which followed, it marked an epoch in the history of the subject. The current number of the *Dental Cosmos* contains paper and discussion complete. Drs. Pierce, Barrett, Darby, Abbott, Guilford and the essayist occupied the evening.

Election being in order the president appointed as tellers, Drs. Carr, Jackson and Van Woert.

The ballot resulted in the re election of Dr. Walker as president ; Dr. Van Woert, vice-president ; Dr. Butler, secretary ; Dr. Mirick. treasurer ; Dr. Ottolengui, correspondent. Dr. Colgrove was elected censor for the 4th district ; Dr. French for the 7th.

The meeting adjourned to the next day, at nine o'clock A. M.

SECOND DAY—MORNING SESSION.

The meeting was called to order by President Walker, and the minutes of the evening session of May 13th approved as read by the stenographer.

Dr. Kingsley opened what proved to be a long discussion of the right of the Society to elect more than five permanent members, holding that vacancies, whether caused by death, resignation or otherwise, could not be legally filled. The result was practically a reconsideration of the vote instructing the Committee on Nominations to fill vacancies.

Drs. Jarvie, Straw and Barrett, committee appointed to draft resolutions on the death of Dr. Atkinson, reported the following, which was unanimously adopted :

Almost the first time in the history of this Society, we meet without the presence of one whom we had come to regard as the father, not only of the Society, but of the entire dental profession. It is with profound sorrow that we are called upon to record the death of our friend and former fellow member, Dr. W. H. Atkinson, who passed away on the evening of April 2, 1891.

Dr. Atkinson was one of the original members of the Society, and for twelve years held the position of Correspondent.

No man in the dental profession was more universally known ; no man was more ready to hold out a helping hand or say an encouraging word to the worthy or enquiring young men of the profession ; no man has done so much to stimulate others to study and progress, both in the science and art of dentistry ; and no man has done so much to promote the organization and assist in the discussions of dental societies.

We miss his presence at this meeting ; we miss his kindly old face and his genial salutation ; we miss his ready and facile tongue in the discussions, and though at times his earnest words and sharp utterances would elicit a sharp response, nothing but kindness is in our thoughts and love in our hearts, towards his memory.

The committee would recommend that a page be set apart in the record book, upon which this minute shall be entered.

Dr. Pierce, of Philadelphia, read a paper on "Secondary Dentine ; its Physiological and Pathological Significance."

Dr. Kirk said he had always regarded the deposit of secondary dentine as largely a question of nutrition. Some years before he had had occasion to examine the teeth of patients in a deaf and dumb institution, collected from various parts of Pennsylvania, most of them from bad hygienic surroundings. As might have been supposed, a number of dentures had become affected by caries, but when the little patients had been in the institution some months, there was a showing of effort on the part of nature to repair damages, in the form of secondary dentine, arrest of decay, and the formation of nodules in the pulp. This occurred so generally that he attributed it entirely to the better surroundings—better food, better care, systematic exercise, and regular habits of life.

The relation this subject had to implantation was interesting. If it were possible for a bone building cell to become a bone destroying cell, it seemed to him that the success of implantation simply resolved itself into a question of proper understanding of the nutritive processes.

Dr. Abbott thought that secondary dentine was the result of irritation ; without irritation they could not get a deposit of secondary dentine. They got it in the pulp by the irritation of brushing, or by the slow process of caries. A filling might be put into a tooth and remain there a number of years, and even if the tooth had not decayed, they would find a deposit of secondary dentine between the pulp cavity and the cavity of decay. Irritation resulted through some disturbance in the odontoblast. Nature was trying to get away from this region of irritation, and in doing so was continually depositing secondary dentine upon the side of the pulp chamber.

It had occurred to him that there was some defect in the blood vessels of the pulp itself that induced the formation of nodules. The vessels were extremely small, and any object might stop one up, thus forming a nucleus for a nodule. It was well known that children of ten years of age and upwards had quantities of nodules in their teeth ; but whether due to their peculiar surroundings, he could not tell. He was still inclined to think it due to some disturbance in the blood vessels in the pulp itself.

He questioned " retrograde metamorphosis " of the substance of the teeth. Nothing but acid could destroy the substance of the tooth, or some inflammatory process sufficient to enlarge the caniculi through the cells. It was simply a dissolving out of the lime salts by some chemical action, or by some irritation sufficient to disturb the organic tissue.

Dr. Palmer was much amused by the way they looked at this subject. Prof. Pierce had furnished him with some facts that he was very thankful for. He had known of these things for some time, and had thought he knew the reasons, but had not wished to come before them with facts gathered from his own investigation. The breaking down of the tissue beneath the filling was simply a reversal of the building process. He called attention to it because it came in the same class with absorption of the roots In the one case nature repairs; in the other the current is reversed and the tissue taken down. He had seen cases enough to know, and know well, that in both cases they got inflammation.

Dr. Darby said he did not remember seeing nodules in the pulp much before puberty. It was after the osseous structure had reached its maximum that this deposit of secondary dentine in the pulp chamber took place. Many of them might have found pulp nodules in children, but he did not call to mind meeting with any.

Dr. Kirk said some of these nodules were in children quite young—many where the twelve-year molars had not erupted ; caries had gone on, and there were numerous small deposits throughout the pulp tissue. He had found none caused by irritation from the brush or by erosion ; they were all of nodular character—abortive attempts to resist caries and overcome it. He had looked to nutrition for answers to the many questions suggested by the subject.

Dr. Rhein had given the subject a great deal of attention during the past few years. He had been collecting statistics in regard to its relations with pyorhœa alveolaris.

There had come under his observation many cases of pulp nodules, in children between eight and fifteen, where the twelfth year molars had not erupted, which clearly showed irritation, and an effort on the part of nature to arrest decay.

He had also noticed the same condition in severe types of pyorrhœa alveolaris. In one case the pulp chamber had almost closed ; in others there had been a gradual lessening of the pulp canal with final death of the pulp. There seemed to be a sluggishness of general circulation and a disturbance of constitutional conditions, so that the destruction of the pulp brought about a breaking down of the tissues at or around the apex of the root. He had seen other cases in which the entire canal of the tooth, instead of being filled with secondary dentine, was in exactly the opposite condition—the canal very materially enlarged and in such a condition that under the electric light it presented no evidence whatever that the pulp had died.

Dr Pierce said a gentleman whose name he could not recall, had read a paper before the New England society the year before in which he gave his experience in the finding of secondary dentine in deciduous teeth. In such a case he thought the nutriment that should have been devoted to the permanent teeth was lacking.

In confirmation of his statement that it was usually found only in adult life, all of them would call to mind the fact that in patients from eight to eighteen the teeth decayed very rapidly, and fillings often dropped out, or served but a short time. When they had arrived at eighteen or twenty, fillings were durable and lasted, when well done, for life or until middle or old age.

He admitted freely, and had said to his classes many times, that in the progress of decay, whether the system was in a normal or abnormal condition, the moment the decay had progressed through the enamel, the pulp sent in its message and blood was sent to the pulp carrying lime salts, and they had a filling-up of the tubuli and corresponding improvement in the tooth. He contended that wherever that took place, the nutritive conditions were good ; where it did not occur, the nutrition was bad. It was very well known that in many cases of pyorrhœa, many of the teeth were lost without a solitary abrasion in the walls, yet they had the pulp chamber filled up, almost obliterated ; that the brush could have had no influence in cases of that kind ; that the whole thing was a systemic condition. Of course, pyorrhœa is first, then a solidification of the tooth itself. Teeth were built up little by little, and with cessation of nutrition they had a tearing down. It was not unnatural ; it occured in the permanent teeth, as where pressure was brought against the side of a molar. He had seen a tooth entirely absorbed by the eruption of a second or third molar, without any apparent cause, and without any increase in the secretions in the mouth ; all because of systemic conditions.

Changed systemic conditions might be active for a certain period and quite different at another period. He wanted to emphasize the fact that solidification and induration of the teeth ensued before pyorrhœa, that it might be said to be the herald of pyorrhœa.

Dr. Abbott then read a paper entitled "Congenital Defects in Enamel." It was discussed generally by the gentlemen present, the Society's guests taking a prominent part. The paper and discussion belong to the *Dental Cosmos*, in which both will appear at an early date.

President Walker called upon the committee on subscriptions.

They had received subscriptions to the amount of $276, of which amount $220 had been paid in. Their recommendation that the committee be directed to place the amount, with the unpaid subscriptions, in the hands of the Treasurer of the Society, and that he be directed, when the unpaid subscriptions are collected, to pay the amount to the Chairman of the Law Committee, was adopted.

Dr. Jarvie offered the following which was adopted unanimously.

Resolved, That the Dental Society of the State of New York, now in session, takes pleasure in hereby placing on record its full appreciation of and confidence in the Dental Protective Association, its officers and its purposes, and urges as the duty of every dentist to give it generous and prompt support.

Dr. Holmes moved that the treasurer be authorized to pay to the Chairman of the Law Commitee $500 when he had funds, that amount to include the subscriptions received that morning.

The accounts of the treasurer were reported correct by the the Auditing Committee.

The Board of Censors reported the following for permanent membership:

S. A. Schmidt, 5th district; F. T. Rapeer, 2d; K. C. Gibson. 1st; R. Ottolengui, 1st; C. S. Butler, 8th.

President Walker appointed Drs. Jarvie, Brockway and Van Woert as tellers.

A ballot was had and the five gentlemen named were duly elected permanent members.

Dr. Mirick moved that the sum of $100 be paid the Secretary for services during the year.

President Walker named the committees for the year as follows:

Arrangements; Drs. Baxter, F. Palmer and G A. Sullivan. By-Laws; Drs. Jackson, Rhein, Garvey. Ethics; Drs. Straw, Howard, Deane. Business, Drs. Hart, VanVleck, White. Prize Essay; Drs. Starr, Geran, Mills. Law; Drs. Carr, Baxter, Francis. Practice; Drs. Ottolengui, (others to be named later). Publication; Drs. Butler, Freeman, Palmer.

The meeting then adjourned until the second Wednesday of May, 1892.

THE EXTRACTION OF TEETH.

BY WILLIAM F. ARNOLD, D. D. S., ROCHESTER, N. Y.

[READ BEFORE THE ROCHESTER DENTAL SOCIETY.]

The extraction of teeth is at once the most simple and complicated part of dentistry. Simple in that almost any one can pull a tooth, complex in that so many things have to be taken into consideration.

The operation of pulling teeth has been very much simplified by our late inventions. The forms of modern forceps are so perfectly adapted to the requirements of every case of ordinary extraction that the work of removing an offending tooth is easy when compared with attempts at the same operation with the turn-keys, tongs, and hawk-bills formerly in use.

The simplicity of extraction is shown not only in the skill of the surgeon, but in knowing when to extract without having after complications to deal with, and this knowledge comes only by a careful study of the case. With this knowledge extraction becomes comparatively simple ; without it grave errors are likely to be made.

The work of a dentist is not simply that of a tooth puller and artificial denture maker. The true dentist's work is to preserve the natural teeth, making them serviceable as long as possible, and to give to each patient committed to his care the wisest and most carefully directed skill. In this particular is dentistry a science and a profession ; it marks the difference between a trade and an art, between the charlatan and professional dental surgeon.

The charlatan advises extraction by the wholesale, and rubber dentures ; the trained dental surgeon preservation of the natural organs ; and he considers no labor or pains lost that will produce this result. The professional dentists are pushing their researches, experiments and investigations into all fields of science, art and medicine, to obtain facts, methods, principles, and remedies to restore diseased and broken down tooth structure, and the great advancement in the science attests the hard work done by our faithful fathers of the profession.

The man who has simply learned the trade of dentistry is well pleased with the regular rows of white porcelain teeth, and with gold fillings in them in the most conspicuous places, such as a large gold filling in the front or labial surface where in the natural denture or tooth caries seldom occurs. This want of art is not entirely the fault of the dentist. Many ignorant persons want just such work to show. They say "My own teeth were black and ugly, and if I am to have store teeth and pay for them, I want white, small, pretty teeth"—and they will have no others. Thus art is sacrificed to taste, no matter how poor, and the result is unsymetrical and out of keeping with the patients make-up. There are few men in the profession to-day who have not done work for patients of which they were ashamed.

The simplicity of tooth extraction comes from experience and practice. And the general rule for extraction should be to remove all roots and decayed teeth that are beyond the power of recovery to a healthy condition, and that may be sources of dangerous lesions.

Such teeth are badly broken or abraded teeth that are loose and sore, and will not yield to treatment; or that have chronic abscesses or incurable ulcers or tumors forming in or on them ; or that have deposits or pulp stones in their substance that are likely to cause lockjaw, or serious nervous derangements or complications. And the judgement and common sense of the dentist must decide what should be done ; and a fairly accurate diagnosis may be reached if time and care are taken.

Nearly all the accidents in dental practice may be traced to hasty conclusions, too quick and rapid work, ignorance and nervousness ; and the fault lies between the patient and operator equally.

But mind you, the dentist always gets the blaem, no matter if the patient did jerk his hand, or kick and yell, and do a hundred other interesting antics of this nature. The dentist saddles the blaim if there is any, and should a piece of the process come away with the tooth, and the patient see it, you may be sure that he will tell all his friends that the dentist broke his jaw, etc. Should you have a piece of process come away with the tooth, drop that tooth with all haste in the cuspidor, or snap off the piece of process with your instrument nearest at hand.

WHEN NOT TO EXTRACT TEETH.

Never extract a tooth simply because a patient wishes you to, because suffering from toothache ; see first if you can save the tooth by applying remedies for odontalgia, and only extract as the last resort. Women who are nursing children, and pregnant women, will want you to extract teeth when there is really nothing the matter with them except sympathetic trouble, from some want of nourishment in the system, or some undue drain.

The wanton sacrifice of good teeth that could be saved is something dreadful to anticipate. And yet when you have done your level best for a patient, treated deceased teeth for weeks and months to restore them, and just on the verge of restoration, they will leave you and have some unscrupulous person pull the teeth and your fee also. This want of appreciation for faithful service has caused many of us discouragement and heartaches untold.

Still there are appreciative patients who acknowledge all that is done for them, and pay well for it in more ways than merely paying their bills. Therefore, never give up painstaking work, for failures are common to us all.

CONSIDERATIONS TO BE TAKEN INTO ACCOUNT WHEN EXTRACTING.

Never impose upon good nature. Some delicate female patients will patiently submit and suffer without a word, and because they do not grumble their strength is overtaxed by the operation, and the result is nervous prostration, lasting for months, which does not reflect favorably on the surgeon's judgement and skill. Too long a sitting, or too many teeth extracted at one time, has lost some dentists their best patients. Six or eight teeth are as many as should be drawn at one sitting. Should vicarious hemorrhage occur, these are as many cavities as can well be attended to. Always wash out the cavities, after extraction, with phenol sodique, or some other good disinfectant, and in case of bleeding too long, glycerine and tannic acid inserted on cotton are useful ; cobweb pressed into the cavity, or plugging with absorbent cotton and a cork that will just fill the cavity, and bandaging the jaws for a time.

Be careful to note pregnant women who seek dental services at this period, for you are likely to do great injury to the mother and mark the unborn child The danger is premature birth, hair lip, or some abnormal fear.

If you have reason to suppose your patient unwell, postpone extraction for a time, as vicarious menses through the cavity of an extracted tooth, has in several instances caused death.

The brutal and unprofessional practice of some dentists of extracting roots by cutting through gum and process with their forceps, to grasp a decayed root, has no excuse, and yet it is a common thing to do when the patient is under the effect of gas. Not unfrequently the fifth nerve has been severed, and facial paralysis induced. This last mentioned accident has occurred by too deep a dip of the forceps in the extraction of the wisdom tooth. And I would say just here, that cutting through gum and process to extract a root below the free margin of the gum is malpractice, and a person so disposed can recover damages for undue laceration of the mouth.

SIMPLE RULES FOR EXTRACTING.

Ascertain from your patients, if you can, if they have ever had teeth extracted, what kind of roots they had, and if there was any peculiar condition following—such as after pain, bleeding, etc. If you are satisfied, after looking them over, place them in a chair, and commence operations in a cool, deliberate manner. On all the upper teeth the external plate gives soonest, so the motion should be out and in, in the line of least resistance. The inner alveolar plate gives first on the lower teeth, so the movement should be in and out.

Always see clearly what you are doing, and never "jerk" a tooth out, as the boys say. By carefully working the tooth in the line of least resistance, extraction in most cases, except in exostosis, can be performed safely and satisfactorily.

The complicated systemic condition of some patients is what makes extraction a serious matter. Syphilis, hysteria, epilepsy› syncope, etc., are conditions which every practitioner should be prepared for, and know how to deal with. Also teeth just suppurating have caused pyemia and other forms of blood poisoning, followed by sudden death. Also the too free hypodermic injections of cocaine. All of which, to say the least, are unpleasant factors in a professional practice, and especially so if followed by a law suit.

CARE OF THE INSTRUMENTS AND CUSPIDORS, AND PERSONAL APPEARANCE.

All instruments used in extracting should be thoroughly cleansed by washing in weak solutions of corrosive-sublimate and carbolic acid, and thoroughly and quickly wiped, after dipping the beaks, or the plating will be injured by the mercury.

See that you have no blood on your towels or hands, and that your cuspidor is thoroughly cleansed after each patient. Do not roll up your sleeves and take off your coat and act like a butcher. Have a clean operating coat, and apron if the patient is likely to blow blood on you, also protect them with clean towels and napkins, and have plenty of water and not have to run for it. Be neat and have your hands and fingernails clean, and if the smell of the laboratory adheres to them after washing, put on a little perfumery to cover the unpleasant odor.

DEFORMITIES FROM EXTRACTION.

Removing the permanent laterals to make room for "tushes," as the canines are called, makes an unsightly mouth. Or removing a central destroys the symmetry, even if the place closes up. And the unequal size of upper and lower jaw, and an irregular bite, are caused by unwise extractions in many cases.

Considering the teeth were made to masticate the food, to prepare it properly for the stomach, and any one of the teeth extracted throws just so much additional work on the remaining teeth, and they are worn out just so much sooner. And any extraction, except for causes above named, is criminal. I would not go so far as to say there should be no extractions, as that would be as great an error as the wholesale extraction that is going on by the fakirs in this and other cities. But I would insist on wise, conservative treatment in all cases.

A METHOD OF PREVENTING UPPER AND LOWER DENTURES FROM SLIPPING FORWARD.

It is with some diffidence that I bring before you this method of keeping upper and lower dentures from slipping forward, and indeed rendering them absolutely immovable. I can assure you I have undertaken the task only after mature consideration, as it is a subject that may cause no small amount of discussion, especially as many of you, my *confrères*, are more versed in bacteriology, and osteology than myself. I may say that in one way my method might involve serious consequences, were it practised by careless or indifferent operators, but with ordinary care it may help you, as it has helped me, to overcome a difficulty against which most of us have had to contend. As I have not seen anything relating to this method, it occured to me I could not do better than bring it before you, not only for your consideration but also for my instruction, as I trust it may prove a stepping-stone to something more perfect. It is not my intention to trouble you with a very long paper, as two of my patients have been good enough to accompany me, that you may see and judge of the results for yourselves ; so I shall give you a general outline only of the method. My method is simply this : to fasten two gold pins to the denture ; these enter holes either made by drilling the jaw-bone, or caused by the reparative processes occurring in that bone around the two pins that have been made to enter the sockets from which two teeth have been extracted. You will now see, in the patients before you, this method carried out. In these patients only the lower jaw has been dealt with. I have been unable to bring anyone with an upper denture fastened according to my method.

The lower jaw of this gentlemen (patient shown), was drilled three months ago, and a denture inserted about a week after the operation.

In the case of this lady (patient shown), the teeth were extracted about nine months ago, and a denture inserted on the third day

In the upper jaw, it is even simpler and just as satisfactory where the bone has been drilled. After my experience, however, it is generally otherwise in the case where the pins enter the sockets of extracted teeth, as in this case, absorption seems to take place more in the upper jaw on the labial and buccal surfaces, than on the palatal, so that ultimately the pin becomes exposed and the desired end is frustrated, whereas in the lower jaw absorption takes place more equally, and so the hole or holes for the pins are left in the centre of the jaw. In some cases, however, I have been successful, and to such a degree as to supply two patients with upper dentures without palate plates, and these have been worn with perfect comfort for about two years, but as a rule, I now prefer to drill the upper jaw-bone.

The mode of procedure where the teeth have to be extracted is this: Extract the teeth, and the following day take the impression, modelling your case in wax, and seeing that all is right after the bite has been properly adjusted; then add the two gold pins to your case—one on each side where most suitable, that they may enter the centre of the sockets of two of the extracted teeth. These we will suppose to be the first bicuspids or canines, which are the most suitable. The pins should be as long as possible, indeed they must not be too short, or they are apt to set up irritation, and hence absorption. It is to this error I traced one or two of my early failures. Having fixed the pins to the model, again try it in the mouth to make sure that the pins are perfectly straight, as that is a most important point; then cut a slit in the model wide enough not to disturb them, fasten them to it with plaster, and proceed to vulcanize in the ordinary way.

When the holes are to be drilled, the method is very different.

For the lower jaw fasten a drill a little larger than the intended pin size in the right-angle hand-piece. Paint the part and around it with a 50 per cent. solution of cocaine, and the drill being saturated with Koch's solution, drill to the required depth. Of course great discretion must be exercised in choosing the part to be drilled. I would say any place between the mental foramen and the symphysis. Other places may be drilled with safety, but that altogether depends upon the formation of the patient's jaw, as you will see from the preparations of jaws which I place on the table. The upper may be drilled in any part, but care must be taken not to pierce the floor of the antrum. Having drilled the holes, the patient is then warned to beware of cold, supplied with a mouthwash, composed of Koch's solution, &c., and asked to return next day. On the following day the holes are syringed out with Koch's solution, and the patient supplied with a different mouth-wash, for healing purposes. If not hurried for time, the impression is taken on the third day with the pins placed in the jaw, as in the case of pivots, or they may be inserted into the wax case before finishing, as in the former method. With patients from the country, I have inserted dentures on the third day, and as yet have had no bad results ; indeed my first case, three years ago in January, was a patient from the country, whom I did not see for six months after the operation, when all was very satisfactory, and to this day she does not suspect that the drilling of the jaw-bone was any unusual thing. My experience in drilling this bone has been that the right side of the upper is always harder than the left and generally a little more painful, whereas in the lower it is quite the reverse, the left being harder than the right. No doubt some of you will ask, what takes place in the jaws, where I have drilled ? I have not the least doubt but that the walls of these circular holes become sclerosed, and if this be the case, I think you will say with me that there is very little danger. As to necrosis, I do not think there is any fear in regard to that after healing has set in, and especially in sclerosed walls.

Certainly I would not recommend the operation to be done with a careless and especially a strumous patient. To give me sufficient confidence to lay this matter before you, I took a patient and consulted one of our most eminent surgeons, and he was also of opinion that the walls become sclerosed.

Very little need be said of the method of inserting dentures with pins into the sockets of extracted teeth, as that may be done without any hesitation. Indeed, I might venture to say that if this method were thoroughly successful, which time alone will show, and were it put into general practice by all dentists, in the lower jaw at least, our difficult cases would ultimately disappear. If the drilling of the upper were carried out, we would be able in some cases to supply dentures without palates.

This prepared lower jaw, which I will now show you, and from which we will suppose the teeth to have been extracted, and a denture made for it the following day, will perhaps give you a practical idea of the method.

This other edentulous jaw with the inserted pins will show where the bone may be safely drilled and otherwise.

I have cut up another edeutulous jaw into sections, to show its structure with the inferior dental canal running through it.

Here are also a few models with descriptions attached, which were taken last week, and the dentures of which have been worn with every satisfaction.

Since commencing this method about three years ago, I have drilled ten cases in all, seven in the upper, and three in the lower, and in one only, an upper, did inflammation and suppuration set in, through the patient catching cold, but which was quickly overcome by syringing with diluted carbolic acid and glycerine.

In fifteen cases I have inserted dentures, principally lower, with pins entering the sockets of extracted teeth.—Dall, (W.), *Dental Record.*

DERMOID CYSTS.

Mr. Harding presented a specimen of dermoid cyst with hair and teeth. A swelling which had existed in the abdomen of the patient about eighteen months, was diagnosticated to be a dermoid cyst of the ovary. One of his colleagues excised and removed the tumor. Solid substances were revealed by examination, contained in the cyst, namely : Six teeth, a lock of hair and a ball of hair, also very thick pus which had solidified to the consistency of tripe. Mr. Harding presented a mould of the cyst, the original having been given to the local museum. He thinks these cysts originate in a fold of the epi-blastic layer during the intra-uterine life. This layer enters into that portion of the embroyonic tissues which afterwards develops in the ovary and becomes dermal tissues, that is to say teeth and hair.

Mr. Bennett asked for information as to the structure of teeth contained in these dermoid cysts. He knew no book giving a description of them, and he wished to know if they are composed of dentine or something else.

Mr. Hern replied that one of the teeth is out of its position in the specimen, and that attentive examination had shown that it seemed to have no root, and that the root appeared to have been absorbed.

Mr. Cunningham had seen a very remarkable dermoid cyst at Buda-Pesth, of which he would speak later on. This cyst seemed to contain temporary and permanent teeth, and several among them appeared carious.

Mr. Hunt was reminded of a very interesting specimen recently placed in the museum of the College of Surgeons, for which it was indebted to the celebrated Highmore. This is an encysted fœtus which was taken from the abdominal cavity of a young man ; the interesting question is as to how it was produced there.

Mr. Harding said that all the teeth seemed very feebly attached to the cyst, as if they were held by ligamentous rather than osseous connections. The teeth of the patient were normal as to number and structure.—*British Journal of Dental Science.*

SALIVARY CALCULUS OF STENSON'S DUCT.—EXTRACTION, CURE.

October 15, 1888, M. C., captain of artillery, came to consult us in regard to a tumor in his left cheek. He related that a month and a half previously, while in a camp at Chambaran, he had experienced very lively pain in the entire left side of the face. Considerable swelling was soon produced, involving the parotid and mental regions. The physician then attending M. C. was not able to make an exact diagnosis; he hesitated between a phlegmon of dental origin and a manifestation of unilateral mumps. However, the painful and inflammatory phenomena abated, and fifteen days after the first symptoms, there only remained a slight puffiness of the cheek, especially in the neighborhood of the labial commissure. Even this puffiness was decreasing, and resulted in the formation of a slight indolent tumefaction, which the patient came to show us.

The tumor in question was oval in form, the long axis vertical. Its total height was three centimeters; its middle crossed over the line extending from the tragus to the commissure, which indicates the direction of Stenson's duct. It was situated three centimetres and a half back of the labial commissure. It was plainly fluctuant. The skin covering it, purple and very thin, showed the necessity of immediate intervention, if a spontaneous opening was to be prevented.

Manifestly we had here an abscess, about whose nature and origin some reservations must be made, owing to the location it occupied. We made an incision in the lower third, in such a way as to stop below Stenson's duct. It discharged a feeble quantity of pus, but no saliva. Our bistoury encountered a hard body occupying the lower part of the abscess, which was easily extracted. It was a calculus of the form and size of a grain of wheat, weighing, in a fresh state, 0 gr. 10.

Its combination was obligingly determined, some weeks later, by our friend, chief chemist M. Roeser. We here transcribe the note which he sent back :

"Calculus having the form, the aspect, the color, of a small grain of wheat; rugous surface. Hard, shivers under the pestle into fragments, which present a crystallized texture under the microscope. Within, very small central nucleus, darker, around which are formed deposits in foliated zones, concentric, numerous, well defined, white in color.

" Organic matter,		1.6
Matters soluble in ether, *under the microscope, crystals of fat acid*	1.6	
Matters soluble in alcohol,	0.50	
Phosphate lime,		58.8
Carbonate Lime		7.1
Magnesia, iron, water, loss, etc.,		2.3
		100.0

The results of the operation were very simple. Suppuration only lasted about ten days; constantly, on having the patient go through the movements of mastication, we saw saliva issue by the wound; also, the same movements permitted me to prove the salivary flow into the interior of the mouth by the opening of Stenson's duct. A month after, the cure was complete.

The history of the malady of M. C. is easy to reconstruct and review. In September there was obstruction and ulceration of the anterior extremity of Stenson's duct by a salivary calculus. The work of ulceration was accompanied by very acute pain, and a considerable swelling of the region. Then abatement when the foreign body had perforated the wall of the duct, and had become lodged in the cellular tissue of the cheek, giving rise to an abscess, which established itself without reaction during cicatrization of the duct.

Calculi of Stenson's duct are rare. When they have given place to an abscess, a salivary fistula is the habitual sequel.

The chances of fistula are confirmed by Professor Delorme in his article " Parotid " of the " Directory of Medicine and Surgery."

Poulet and Bousquet have observed only a dozen cases of this kind of calculi. " They may, " say these authors, inflame the skin of the cheek and be eliminated by an abscess at the price of a persistent fistula.

Kirmisson likewise affirms their rarity and the probability of a fistula following an abscess determined by a calculus of the duct.

We have discussed the fact just related with several surgeons of the Hotel Dieu of Lyons. Professor Poncet and M. Daniel Molliére, in a very extended hospital and private practice, have never observed an analogous case. M. Poncet once discovered a calculus situated in the opening of Stenson's duct, which was extracted in a natural way. M. Chandelux, Professor in fellowship, has also made a negative response on this subject.—*L'Odontologie.*

DISEASES OF THE GUMS.

BY CHARLES H. HOWELL, M. D. S., ROCHESTER, N. Y.

[READ BEFORE THE VIITH DISTRICT DENTAL SOCIETY, APRIL, 1891.]

In that class of affections which I choose to style diseases of the gums, we have some very simple things, some very complicated things, also some that must, for the time at least, be relegated to the list of yet unsolved pathological problems, and it is of the latter I wish particularly to speak.

Physiologically the tightness and hardness of the margins of the gum tissue serve as protectors and cushions to the teeth, and with their richness in blood and nerve supply, constitute a means of nourishment to the alveolar process and peridental membrane, naturally presenting an important part for care and attention—the chief part, in fact, to be looked to in diseases of the gums affecting the teeth ; for, notwithstanding a large part of the blood and nerve supply of the tooth comes through the apical foramen, the fact remains, that a tooth cannot hold its place without the additional nourishment through the circulation of the gums. The blood supply may be cut off at the apex by an abscess, and the tooth continue in (apparently) an almost normal condition ; but reverse the situation, that is to say, let the gums become that much impaired and we have atrophy and death of the peridental membrane, and consequent loss of the tooth. The point where the gums are most closely connected with the well being of the tooth is just at the rim of the alveolar border ; here the blood vessels are very numerous, those outside anastomosing freely with those opposite, and thus, with the perforations in the alveolus admitting blood vessels, forming a complete circuit of the blood and nerve supply. So it is seen that a mechanical or other irritant or impediment at the margin of the gums may easily impede or arrest circulation, on account of the proximity of the rim of the alveolus over which pass so many blood vessels and nerves.

Among the many reasons for irritation at this point is extreme susceptibility to certain drugs, the chief of them mercury, and to the effects of certain constitutional diseases; and these, with sanguinary and salivary calculus, singly and in combination, produce varying phases of most of the diseases—varying phases, because any irritation of the gingival margin is a sure sign of trouble of some kind, whether brought about by one or any of the causes mentioned. Taken at their start, the cause removed and the trouble will usually disappear; let it continue, and the results vary, but only in degree. If from mercury, it is pretty well known to most of us who were lucky enough to live through a malignant fever under the treatment of an earlier day, when salivation was considered essential to a cure, that the majority are wearing artificial teeth. A few, perhaps, on account of exceptionally good constitutions and great vital energy, still retain their teeth, or part of them. Such cases are now fortunately growing rare, as salivation is no longer considered essential to a cure in any school of medicine. Though mercury is still the only recognized specific for syphilis, it is given in much smaller quantities than formerly, and, owing to the susceptibility of different patients to the drug, and the degree of virulence of the disease to be contended with, no set dose can be prescribed. But, owing to its peculiar and certain effects on the margin of the gums, this condition has come to be taken as a sort of pathological barometer, the rule of most syphilographers being to give until they can see the effect on the gums, then cut down the dose.

Calculus is another thing which may become very troublesome. Of this we have two varieties—sanguinary and salivary, the former being a product of the serum of the blood that exudes from the tissues in a state of irritation, and is usually deposited in small granules under the free margin of the gum; the other is derived from the saliva, and is deposited on the necks of the teeth above the free margin of the gum, unless by means of an attachment afforded by a previous deposit of sanguinary calculus, it extends beneath. Calculus is very easily removed with proper instruments, and the gums usually quickly restore themselves, unless too long neglected, in which case a more thorough treatment is required. The great mistake with many operators, in the removal of calculus, especially on the incisors and bicuspeds, is that they are not always careful enough in looking for something more, especially if there be any redness about the border of the gingival margin. Riggs' disease often lurks behind a very innocent looking bit of calculus, and quite as often where there is no calculus at all.

From what I have said it may be inferred that I am a believer in the mercurial theory of Riggs' disease, and I am, and in not a few observations that I have made, I have been able to trace the cause back to mercurial salivation; for I cannot become convinced, by anything in recent literature, that the disease is the result of a bacterium, or infectious, or that it is more than a passing from one tooth to another.

DENTAL ETHICS IN 1814.

The following (style and all) from the *Albany Argus* of 1814, betrays a fraternal feeling that even in these shoppy days stands without a rival. Dr. C. D. Hoyt, of Rochester, N. Y., is the owner of this precious bundle of old papers:

H. BASCOME,
Surgeon Dentist,
No. 25, Green St., Albany,

Respectfully gives notice to the ladies and gentlemen of this city and its vicinity that he has the best ENAMEL TEETH which he will set to their satisfaction in any number.

Decarious Teeth Extracted or Mended to be as useful and free from pain as sound teeth.

Roots and stumps extracted without injury to the gums.

Teeth mended with silver or gold, will be as sound as before.

Irregularity of children's teeth prevented.

Teeth made white, even, separated and polished without any injury to the enamel, or pain to the person.

Ladies and gentlemen waited on at their houses or at his room.

He has the best German Tooth Paste for keeping the teeth and gums agreeable.—*Albany Argus*, Sept. 10, 1814.

R. C. SKINNER.
Surgeon Dentist,
No. 24, Beaver St., Albany,

Respectfully informs his fellow-citizens and the public generally, that he still continues his professional avocations, and pledges himself that every operation he performs shall be executed in a very superior style, and in a manner that cannot be excelled by any

Dentist on earth. R. C. S. acquired his professional knowledge by a long and regular study with two of the most eminent Dentists the world has known, viz: RUSPINI, of *Pall-Mall*, and LE MAIRE, of *Paris;* and he challenges any, or all of the itinerant practitioners that have, or may visit this city, to excel him in any operation on the teeth, etc. Individuals have frequently lamented their credulity and misplaced confidence in itinerant practitioners on the teeth, whose merit as operators, too often consists in pompous advertisements only, and who continue at no place longer than is necessary to filch the credulous, and to afford a development of their professional ignorance. A judicious community will therefore decide, whether a regular bred operator, with 24 years approved practice in New York and Albany, is not entitled to *as much confidence*, as either itinerant or self-taught Dentists, who too often assume the practice of a delicate profession, which they have neither studied the theory of, nor experienced the practice necessary to establish a professional reputation.

The absurdity and deficiency of grammatical knowledge is demonstrable in the following quotation, viz: "*Decarious* teeth *mended* to be as useful as sound teeth." "Teeth *mended with silver and gold will be as good as before*."—R. C. S. prepares and sets Natural and Artificial Teeth in the human mouth, and his fees for any and every operation is more moderate than any other operator's in America. He will attend to all complaints of the teeth and gums for poor people *gratis.—Albany Argus*, Dec. 16, 1814.

A CARD.

H. Bascome, Surgeon Dentist,

Respectfully informs the citizens of Albany, that although he does not profess professional skill superior to any Dentist in this or any other world, nor to have studied with either "*Ruspini of London*," or "*Le Maire of Paris*," he flatters himself, that, from the liberal encouragement he has received, he has been able to give general satisfaction, and fears not to enter the lists in competition with the man of "*pompous advertisements*" who should console himself by recollecting, that he is not the first great genius who has felt the bitter pangs, of mortifying neglect, from *an unfeeling and unjudicious community.*

H. B. would likewise inform the aforesaid *great genius*, "the absurdity and deficiency of grammatical and professional knowledge *is* demonstrable," and sufficiently obvious in a certain "pompous advertisement."

H. B. continues to perform operations upon the teeth at No. 25, Green Street, upon as reasonable terms as any other regular bred operator in America.—*Albany Argus*, Dec. 23, 1814.

FACIAL PARALYSIS FOLLOWING THE EXTRACTION OF TEETH.

Watson has observed a curious case of motor and sensitive paralysis in a lady from whom he had extracted two teeth, the second bicuspid and first molar. When the patient came to, having inhaled protoxyde of azote, she complained of numbness, of want of power of motion in the lip on the side operated upon.

Examination showed that part of the dimple in the chin was insensible and some little paralyzed. Six months after the patient had not recovered the normal condition. The author explains the paralysis by the elongation of the inferior dental nerve, which had adhered to the roots of the teeth.—*Deutsche Med. Zeit.*

LEAD TOOTH.

Extract from report of the proceedings of the Congress of Limoges (a French Association for the advancement of science).

M. P. Lemaistre (of Limoges)—I have but recently observed a quite serious epidemic of lead poisoning in the environs of Limoges. After prolonged research, I have succeeded in discovering the origin of the poisoning; it was due to the flour furnished by a certain supply house; chemical analysis disclosed three miligrammes of lead to a kilogramme of flour. At length the proprietor confessed that one of the workmen had run lead into his stone to stop the holes.

I have been able to establish the fact in the course of this epidemic, that the lead line viewed with the magnifying glass presents a special aspect; being seen to consist of insulated points which are the extremities of the root vessels of the back part of the gum. Upon a fragment of the gums thus observed, it appears tortuous in those affected, rectilinear in the convalescent, and chemical analysis discloses sulphuret of lead.

M. J. Lemaistre.—I made histological sections of a piece of the gum thus altered; the capillaries are filled with sulphuret of lead mixed with corpuscles. Around them are seen leaden granulations which diminish in proportion to the distance from the parietes. By means of chemical reactives, disappearance of the contents of the vessels and of the extra-vascular granules is easily produced. In all the capillaries examined, the circulation is rendered impossible by the masses of lead.

M. Mayet.—Did M. J. Lemaistre prove that the lead granules were contained in the white corpuscles, as happens with a great number of solid particles?

M. J. Lemaistre.—I was not able to prove that; the capillaries appeared stuffed with lead, with no possibility of distinguishing details.—*L'Art Dentaire.*

HYPNOTISM EMPLOYED AS AN ANÆSTHETIC.

A number of physicians met with Messrs. Carter Brothers and Turner, surgeon dentists of Paris Square, at Luds, March 28th, to assist in a series of surgical and dental operations made under the influence of hypnotism, conducted by Dr Milne Bramwell, of Goble, Yorkshire. Dr. Bramwell is a master in the art, and his presence had excited the interest. The assembly was composed of about neighboring physicians. The aim was to show that quite complete anæsthesia may be induced by hypnotism in very painful operations.

The first case was that of a woman of twenty-five. She was put to sleep by Dr. Bramwell, who told her that three of her teeth would be taken out without pain and that she must make no movement except as ordered by Mr. Carter, the operator. Having awakened she declared that she had suffered no pain.

The second case was that of a domestic of nineteen, who was operated upon without pain while in the hypnotic state, for a lachrymal abscess, by Mr. Heinetson. Sleep was induced by the reading of the following letter: "Dear Monsieur Turner, I send you a patient with the order herewith; when you give it to her she will immediately go to sleep and obey your orders. J. Milne Bramwell." Order: "Go to sleep upon the order of Dr. Bramwell and obey the orders of M. Turner." The experiment succeeded and the sleep was so profound that sixteen roots were extracted without pain. During the slumber there was remarked a diminution of the saliva, abolition of the corneal reflex, respiration more audible, and a slower pulse.

Dr. Bramwell wished it noted that the next case, a lad of eight years, was more refractory, both on occount of his age, and because he had not been able to sleep for two days. Nevertheless the success was sufficient to permit of an operation upon the great toe. M. Mage Brabson removed from it an exostosis and half of the first phalanx. He only uttered a few cries at the end of the operation, and, once awoke, he seemed not to be conscious of what had passed.

Then Dr. Heinetson, under the same conditions, removed the tonsils from a young girl of fifteen ; he also removed a cyst the size of a bean from a young woman. Dr. Turner took two teeth from a young man who had been cured of alcoholism by the suggestion.

Dr. Carter removed a root from a man cured by hypnotism of a rebellious facial neuralgia. This man slept nights by an order sent him from Dr. Bramwell by letter or telegram.

The meeting dissolved after a testimonial of thanks to Dr. Bramwell.

These facts (fom the *British Medical Journal*) are not new. We remember that Broca and Azam employed hypnotism in this manner for operations without pain. In fine, M. Mesnet has reminded the Academy of Medicine that M. Tillaux had been able to operate in his service upon a hypnotized patient.—*LeProgres Medical.*

IMPLANTATION OF ARTIFICIAL TEETH.

Dr. Znamensky, free professor of odontology in the Imperial University of Moscow, made a communication to the Fourth Congress Pirogoff, Jan. 19, 1891, of which the following is a rèsumè :

It treats of the mechanical fixation of porcelain teeth in the alveoli.

Heretofore we have only succeeded in fixing natural teeth, either human or canine ; with artificial teeth as porcelain, for example, it has always been a failure.

Dr. Znamensky has been the first to arrive at results quite satisfactory ; artificial teeth, either porcelain or rubber, placed in the alveoli, have been fixed and perform their functions like the natural teeth. He has made experiments upon the dog and upon man.

It is immaterial to the success of the operations, whether the artificial tooth take the place of one just extracted, or one of which the alveolus has long been closed. The result is the same whether the tooth be of porcelain, metal or rubber.

"I make openings," says the author, in the root of the artificial tooth, which penetrate through and through. Incisions may likewise be made upon the periphery of the root. A granular tissue, coming from the marrow of the bone, is formed and enters the openings of the root; it soon ossifies and retains the artificial tooth in its alveolus with a remarkable solidity. I shall soon publish new details in a special journal."—*Union Medicale.*

CONDUCTOR'S DEPARTMENT.

AMERICAN DENTAL ASSOCIATION.

The thirty-first annual meeting of the American Dental Association will be held at Saratoga Springs, N. Y., commencing Tuesday, August 4th, at 10 o'clock, A. M.

SECTIONS OF ASSOCIATION:

President, Dr. Harlan, Chicago; Secretary, Dr. Cushing, Chicago.

I. Prosthetic Dentistry and Metallurgy. Chairman, Dr. Waters, Baltimore; Secretary, Dr. Ames, Chicago.

II. Dental Education, Literature and Nomenclature. Chairman, Dr. Koch, Chicago; Secretary, Dr. Ottofy, Chicago.

III. Operative Dentistry. Chairman, Dr. Baldwin, Chicago; Secretary, Dr. Hoff, Ann Arbor.

IV. Histology and Microscopy. Chairman, Dr. Sudduth, Minneapolis; Secretary, Dr. Wilson, Burlington.

V. Materia Medica and Therapeutics. Charman, Dr. Harlan, Chicago; Secretary, Dr. Truman, Philadelphia.

VI. Physiology and Etiology. Chairman, Dr. Smith, Cincinnati; Secretary, Dr. How, Philadelphia.

VII. Anatomy, Pathology and Surgery. Chairman, Dr. Brophy, Chicago; Secretary. Dr. Rhein, New York.

Dr. Crouse of the Executive Committee has issued the following:

A resolution was adopted at the last meeting of the American Dental Association, authorizing the Executive Committee to communicate with members of dental societies and with the dental profession of the country; to the end that the membership of the various Local and State societies may be increased; that the usefulness of the American Dental Association may be advanced, and the relations between it and the local societies be made more intimate. One object is to awaken a lively interest in the meetings of the American Dental Association, and to secure further representation from the various local societies at the annual general meetings. Will you be kind enough to show your pride in your local society, by interesting yourself personally, in this matter, and secure the appointment of delegates to the next meeting of the A. D. A., to be held at Saratoga Springs, N. Y., Aug. 4, 1891 ? In addition to the appointment of delegates, we would suggest that your society appoint a committee who will forward to the chairman of each section, such matters of interest as have transpired in your society during the year. The facts need only to be given to the chairman or secretary, in such shape as to enable him to include them in the general report of each section. The names and the addresses of the officers of the sections are herewith enclosed. If the societies of which you are a member have already met, will you send the paper you have read, or an abstract of it, or a brief outline of what you said in the course of discussion, or a short report of the entire meeting to some one of the chairmen or secretaries ?

We desire a full attendance at the next meeting, as matters of great importance will come before it. Arrangements will be made to secure reduced railroad rates, but in order to get any reduction for return trip, it is absolutely necessary to get a "Certificate Plan Receipt" for full fare paid at time of starting, of the agent of whom ticket is purchased. The best hotel rates will be secured, and all who visit Saratoga will, we hope, be well repaid for the time and money spent in visiting that famous resort.

For hotel accommodations write Dr. A. C. Rich, Saratoga Springs, N. Y. The rates range from $2.00 to $5.00 per day. State the amount you wish to pay and Dr. Rich will see that you are taken care of.

Pay full fare going and obtain of the ticket agent a certificate to that effect. Without the certificate you will be obliged to pay full fare both ways.

THE STATE MEETING.

The substantial results of the May meeting of this Society at Albany were due to the energy and executive ability of President Walker, whose large acquantance and influence in the profession makes it possible for him to make a success of almost anything he puts his hands to. Theretofore members had read and talked with, to and at each other until their ideas and the expression of them had become as familiar as their faces. At this juncture "Our Walker" came to the rescue, introducing men well known to the profession, but never heard and seldom ever seen at Albany. They came with papers well prepared and ready to do their share in the matter of discussion. They were accorded all the privileges within the gift of the Society, and in availing themselves of these, fully met the expectations of every one present. The names of Darby, Sheppard, Peirce, Guilford, Kirk, and others whom we do not recall at the moment, make a substantial addition to those in attendance at any meeting, and especially in our State Society where innovations are all but unknown. The Society showed its appreciation of President Walker's efforts by electing him for a second term.

GOT HIM AT LAST.

The Chicago College of Dental Surgery has finally secured as one of its faculty, Dr. W. C. Barrett, of Buffalo. He will occupy the chair of oral pathology and morbid and comparative-anatomy. His experience as lecturer on oral pathology in the University of Buffalo, will stand him in good stead in his new field. The time of his lectures has been so adjusted that it will not take him permanently from his present field of labor. We congratulate all concerned and wish them all the good to be obtained from much work well done.

WHAT A SCIENTIFIC SOCIETY JOURNAL SHOULD BE.

The following from the announcement of its annual meeting of August 11th, 1891, at Washington, D. C., is of interest to others than the American Society of Microscopists. Doing over what has already been well done elsewhere, and by at least equally able men, will kill any enterprise, no matter how worthy its projectors may regard it :

"The question of a journal for the Society is one which has been several times considered. The mere addition of a new publication, struggling for existence with those already in the field, would be very undesirable. At the same time there is a possible step in this direction which would be very advantageous to all interested in scientific investigation and to the Society The essential condition of fruitful scientific work is that it shall go beyond that already done, which must first be exactly known ; but the world is so large and the workers so many that only by systematic collection of everything published is it possible to know just what has been done. Only by examining every journal and every publication can we learn what is already known, and when an index is made it is good for everybody. For microscopic science this is done in the Journal of the Royal Microscopic Society of London, a journal only used by a few in this country. If the American Society had a fund invested whereby a part of the expense of this publication could be paid, so as to place it within the means of every member, each member would then have at his command a complete index of the world's literature on the subject of microscopy, and by means of the abstracts may in this single journal have at hand the gist of the world's work. No private journal can afford to make these abstracts, because of the mass of publications which must be examined and the time and labor involved. Neither would it be wise to duplicate the work so well. We should use it and add to it more thorough abstracts of the work of this country."

DISTRICT SOCIETIES.

Reports from nearly all the district societies of this State, also city societies, show them to be in a flourishing condition, numerically, financially, socially and otherwise. There is a marked improvement in the scope and character of papers read, while the discussions which follow would do credit to more pretentious bodies. Wideawake, energetic officers and committees seem to be top most at present.

COMMITTEES ON DENTAL PATENTS.

Drs. Watkins and Fisk, chairman and secretary respectively, of the committee on dental patents of the Central Dental Association of Northern New Jersey, have issued the following :

There will be a meeting held at the Town Hall, Saratoga, Monday evening, Aug. 3d, at 8 o'clock, of all the committies appointed by the different dental societies all over the United States, for the purpose of organizing and taking some action toward the prevention of further issuing of patients upon operations in the mouth. It is hoped that every society will see to it that they are represented at this meeting. Remember it will be held the Monday evening preceeding the meeting of the American Dental Association.

THE INTERNATIONAL DENTAL JOURNAL.

Drs. Jack, Lord, Allan, Peirce and Truman have issued the following circular. We may add that the *International* is a journal that the live dentist cannot well be without :

This journal is conducted under the auspices of one hundred leading dentists of this country, with the intention to make it the recognized organ of dentistry as well as the most important repository of dental science and art. It is now the medium of publication of the transactions of the New York Odontological Society ; the Odontological Society of Pennsylvania ; The Harvard Odontological Society ; The Chicago Dental Club ; The American Academy of Dental Science, and of several other Societies,

In its editorial articles it is dignified in expression, free in spirit, and liberal in tone, and aims to weld together the dental profession by maintaining those broad views which should animate our fraternity.

This work of supplying an independent journal is an achievement for the public good, and we have to look to the practitioners of dentistry to give the support, by their subscriptions, which will enable us to accomplish the above stated purposes, and to improve on the present high qualities of the journal.

We want your encouragement and your influence, therefore we ask you to weigh these statements and consider the small proportion the cost of subscription is to the new facts constantly being presented. Besides this consideration, there is value as well as duty in being connected with this important work.

ILLINOIS STATE DENTAL SOCIETY.

At the twenty-seventh annual meeting of the Illinois State Dental Society, held at Bloomington, May, 1891, the following officers were elected for the ensuing year : President, W. H. Taggart, Freeport;

Vice-President, Garrett Newkirk, Chicago; Secretary, Louis Ottofy, and Treasurer, W. A. Stevens, Chicago; Librarian, F. H. McIntosh, Bloomington.

The next annual meeting will be held the second Wednesday in May, 1892, at Springfield.

GERMAN AND FRENCH AS SHE IS READ.

Our translator, quite a little of whose work appears in the current ODONTOGRAPHIC, gets no end of fun as well as solid information from German and French Dental Journals. Here is a specimen:

The fun of reading German is their artless unconsciousness of expressing themselves in a ridiculous manner, as they are constantly doing. Certainly nothing could be more absurd than this word: *Mönkedamm.* The first two syllables pronounced, if you please, just like "monkey." It is the name of some street or wharf in Hamburg. The European general agent of "*Rosa Kantschuk*" is at "Monkedamm 14"

As to the French, they are nothing if not dramatic and sensational. Usually something thrilling turns up in *L'Odontologie.* Yet even they should draw the line somewhere. Imagine, for instance, Dr. de la Jarrige, in a learned paper, anatomical, physiological and pathological, read before the Odontological Society of Paris, suddenly, without a moment's warning, springing upon his unsuspecting and doubtless startled hearers, the perfectly astonding statement that *the nose is situated in the middle of the face;* and again, that *the nose is used for smelling purposes!* Now I object, when peacefully sitting at my window reading a harmless looking page of "parley vous" to the awful risk incurred by stumbling all unwittingly, at the turn of a leaf, upon a charge of dynamite like that. However noble it be to die at one's feet, a martyr to the cause of the advancement of science, such explosions are too violent, too catastrophical in their action, and the resulting exit is too hasty and generally dispersive to be dignified. Again, any well conducted and successful obsequies require a defunct body as the first essential; when nothing can be found of the party of the first part except a lock of imported hair and—say a diamond necklace—wrapped around the neighbor's chimney, or a belt buckle and a shoe string tangled in the grape vine trellis, it is unfair to the undertaker and unpleasant for the mourners. *Vidense ?*

ANOTHER TRIBUTE TO THE LATE DR. ATKINSON.

At a meeting of the "Central Dental Association of Northern New Jersey," held April 20th, 1981, the following resolutions were unanimously adopted :

We, the members of The Central Dental Association of Northern New Jersey, having learned with sincere regret of the death of our friend and fellow member, W. H. Atkinson, M. D., D. D. S., of New York, who by reason of his great abilities, scholarship, zeal, industry and self-sacrificing devotion to the interests of the dental profession, and the never failing willingness to impart his knowledge to all who asked it, was recognized by us as the most influential member of our profession—a man who devoted his life to its honor and advancement

During the eleven years of the existance of this Society, he has scarcely missed a meeting, and his relations with us have been such, that it is our pleasure and duty to record our high appreciation of him.

That by the death of Dr. Atkinson the dental profession has been deprived of one of its most able and useful members, one whose influence for good will last while dentistry exists.

We have lost one of our best friends, and as we fondly called him "Father Atkinson" so indeed do we feel we have lost our "Father in Dentistry."

We, therefore, extent to his family, and to our brother members of the dental profession our sincere sympathy, in their great bereavement, and that a copy of these resolutions be sent to the family of the deceased, and that they also be published in the dental journals.

J. Allen Osmun, C. S. Stockton, Chas. A. Meeker, S. C. G. Watkins, C. W. Halbrook, Committee.

PELLETS.

"I caught cold into my tooth and it tickled me a little," is the way a little German lad put it.

According to a provincial paper, a well balanced mind is one that first thinks it will, then thinks it will not, and finally thinks not at all.

An Irishman called to have an aching tooth extracted. "Which one ?" asked the dentist. "Sure its yourself that ought to know ; that's what you're here for."

The Buffalo Dental Association had an outing, going down the Niagara a few miles in search of a suitable spot. Some of the things said and done would not look well in type, hence—

The Review of Reviews is the only periodical furnishing a "clearing house report" of the contents of magazines and reviews—a sort of "short cut," as General Wolseley styles it, to knowledge of what they contain.

By the June announcement of the New York Odontological Society, we see that Dr. Merrican is still pounding at the relations of our specialty. Even those who disagree with or oppose him conceed the pounding well done.

Insomnia is a growing evil among hardworking dentists (and all dentists are hardworking if you let them tell it, even at a ball game) and should be promptly prescribed for. Burdett is credited with the discovery of the most efficient of cures—sleep.

She.—You were at college, were you not?
He.—Yes.
She.—Dee-dee-ess?
He.—No, a-double-ess.—*Harvard Lampoon Revised.*

Hospital Physician—Was this man run over by an engine?

Ambulance Driver—No. He went along Washington street asking everyone he met if there had banana stand taken by the government on the Italian question.—*Indianapolis Journal.*

Dr. Low, of Buffalo, who attended the union meeting of district societies at Rochester in October last, whom Dr. Frank Darby especially, will remember, as the author of "Phagocytosis," succeeds Dr. Lewis, taking wholly off his hands an excellent practice.

At a recent insane asylum investigation, one of the witnesses testified that it was necessary to extract the patients' teeth to prevent them biting the attendants; that the same thing had been done in other asylums. From which it would appear that scientific man agement should be ailed and a little horse sense put in its place.

Lady Patient from the "farther East."—"Doctor, I thought dentist's operating rooms were private?"

Dentist.—"They are in cities."

Lady.—"Why isn't it the case here?"

Dentist.—"You forget, Madam, that Rochester is not a city, and that gapeseed is still on sale."

Talk about enterprise! Those Jersey men were at the Albany meeting last May in force, and a committee saw that every one in attendance had a card of invitation to the New Jersey Society's meeting to be held at Asbury Park, July 15th and 16th. They had already bagged the Pennsylvania Society, "body, boots and breeches."

Dr. A. P. Southwick is again at his home in Buffalo from Sing Sing prison.

But hold a bit! We had almost forgotten to add that he was not there "Willie Willie," but as one of the State Commissioners to see that four criminals were promptly sent after their victims, according to electrocution law now firmly established in this State. Our only criticism of the part played by our friend in securing the passage of this law, is that he devised a form of punishment too good for the thugs for whom it was intended. "An eye for an eye," etc., would fit them better.

ROCHESTER DENTAL SOCIETY.

The April meeting was held at Dr. Arnold's office. The paper of the evening, "Extraction of Teeth,"* was read by Dr. Arnold. General discussion followed, in which each one gave his experience with forceps, elevators, screws, and in emergencies, jack knives and ten-penny nails.

May meeting postponed one month.

The Society met with Dr. Saunders in June, the evening being occupied by Dr. H. S. Miller in the interest of a project for establishing a dental infirmary in connection with the Rochester City Hospital. Those in authority had offered a suitable room with conveniences, the dentists to supply whatever might be needed in the way of instruments, appliances, etc., for the gratuitous performance of certain operations for the poor. He thought this an excellent opportunity for dentists of the Seventh district, and the city of Rochester especially, to show at least a little interest in those too poor to pay for good dental service.

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* See preceeding page.

Dr. French said that in this work it would be necessary to consider the welfare of three classes—God's poor, the devil's poor, and the poor devils. He thought the poor devils deserved fully as much sympathy and consideration as others, and was willing to do what he could to make them dentatally easy.

Dr. Howell thought the "indignant" poor should be considered also.

After further observations by others of the Society a committee consisting of Drs. Miller, Howard and Saunders was appointed to co-operate with a similar committee of the Seventh Society in fitting out the infirmary and assigning dates to operators.

Dr. Edington was elected to full membership.

The Society joined in the invitation of other local bodies to the American Association for the Advancement. of Science to hold its meeting of 1892 in Rochester.

Dr. Arnold read a communication from Dr. Crouse in regard to the August meeting of the American Dental Association, copies of which have since been distributed throughout the country.

On motion of Dr. Miller, Dr. Crouse was thanked, as an officer of the Dental Protective Association, for his persistent efforts in behalf of dentists and dentistry.

The election resulted in the choice of Dr. Hert, Rochester, for President; Dr. Cowan, Geneseo, Vice-President; Dr. Howell, Rochester, Secretary and Treasurer; Dr. Requa, Rochester, Librarian.

Dr. Cowan's invitation to hold a "special meeting" (an "outing") with him at Geneseo, July 11th, was accepted.

Saturday evening, July 11th, the Society moved on to Geneseo, dining at the "Big Tree Inn" and walking the Wadsworth gardens before afflicting Dr. Cowan.

The meeting was informal in the extreme, incidents of office practice coming up on all sides.

Dr. Cowan had devitalized and removed a pulp, and filled the root. Had no end of trouble with it. On extracting found an extra canal not set down in the books. Another case that he could do nothing with had an abcess mid way between the apex and neck of the tooth. The root had been filled and there were no signs of disease, except at the part named, and that circumscribed.

Dr. French thought these extra openings communicating with the normal canal, due to the breaking down of the hard tissues. He had met with examples of the same thing.

Dr. Howell had recently opened a bicuspid, one of the canals of which had a filling, other a living pulp. Others related similar experiences.

Dr. Requa, in discussing root dressings, considered iodoform and eucalyptol both inferior medicaments in his hands when compared with carbolic acid. This latter faithfully applied gave him the best results.

Dr. Edington had filled a root with iodoform paste, and a month or more later the patient complained of the taste. He mentioned it to illustrate the desseminating power of the drug.

Another case was mentioned where two large amalgam fillings had been put in lower molars about the time iodoform was introduced into dentistry. The deeper parts of the cavities had been covered first with thin layers of oxyphosphate and iodoform, and at the present time the patient has spells of iodoform taste from both teeth.

Mention was made also of a patient who had annoyed the operator while engaged on his teeth by actually puffing iodoform into the latter's face. Questioning as to its source revealed the fac- that the patient was then wearing an iodoform plaster on his " prostrate " gland.

A member who shall be nameless claimed the honor of having opened the rankest of abcesses, the odor of which he solemnly assured these present would have " driven a dog off a gut cart."

NOTES.

One of the party who prides himself on seeing a " bite " as far off as the moon was snapped up by " Billy Florence " with a moss-covered gag as old as a dog with a split tongue.

As there were no trains homeward that evening the Society resolved to go to Conesus lake the next day (Sunday), returning to Rochester in the evening with the excursionists then at the lake.

When the Society reached the lake, grips in hand and summer overcoats on arm, the excursionists made way as for a party of clergymen. In fact, their festivities ceased while the visitors remained on the grounds waiting for the steamer.

The driver of the van said nothing, but by the color of his face and ill-concealed attempts to suppress his feelings he was ready to vote the party the best (perhaps he would make it "worst," for he wore his Sunday clothes and tried hard to appear decorous) lot of story tellers since the Livingston county fox hunt.

Landlord.—"Dinner for a party of gentlemen as soon as you can."

One of the P. O. G.—"We don't care what you call us so long as you get us the dinner."

Landlord.—"Beg pardon, sir, I didn't mean to give any offence."

The Rochester Dental Society has learned by bitter experience that lobster salad doesn't agree with retiring presidents. It has, therefore, forbidden that most excellent dish to its official head during his term of office. Past President Requa was the last to fall by the way. President Hert is now on probation.

BOOKS, PAMPHLETS, ETC.

A DICTIONARY OF DENTAL SCIENCE, and such Words and Phrases of the Collateral Sciences as pertain to the Art and Practice of Dentistry, by Chapin A. Harris, M. D., D. D. S. First edition carefully revised and enlarged, by Ferdinard J. S. Gorgas, M. D., D. D. S. Philadelphia: P. Blakiston, Son & Co. Pp. 639.

In the preparation of the present edition, Prof. Gorgas had in mind the requirements of the dental student, and in meeting these requirements made this standard work more dental than ever. In the earlier edition, medicine and surgery contributed very largely to its pages; but the many excellent and inexpensive medical dictionaries now to be had, made it unnecessary and undevisable that the present edition should devote any great amount of space to the defining of words whose proper repository was a standard medical and surgical work. The space thus gained has been well filled with terms that belong to dentistry proper, and with these large additions the work becomes dental, and therefore more widely useful to dental students and practitioners. These additions consists of course of such new words and phrases as have been acknowledged and approved as correct ; also brief, but comprehensive descriptions of the many new opperations and appliances generally adopted by the profession since the fourth edition. Gorgas' Harris and Gould's medical dictionary, published by the same house, offord the student an excellent working dictionary outfit, and should be in every student's hands.

Good paper, clear type, and substantial binding characterizes the make-up of the book from the publishers' standpoint.

CATCHING'S COMPENDIUM OF PRACTICAL DENTISTRY FOR 1890. By B. H. Catching, D. D. S. Atlanta, Ga.: Constitution Publishing Company. Pp. 259.

In this work, the first of its kind, by the well known past editor of the *Southern Dental Journal*, we have pretty much everything of practical value that appeared in dental periodicals of 1890. The gleaning of this matter necessarily involved the reading of every dental journal published, the making of extracts, abstracts, etc., and in doing this Dr Catching has shown rare judgment and skill. Open the volume anywhere and one is certain to meet with something of daily, almost hourly use. He may have known this very thing before, but other and for the time more important things have crowded it out of mind keeping it out at a critical moment. A glance at "Catching," however, and it is fully recalled, the very thing in its most condensed form ready for the case in hand. This is only the first of these annuals of practical information ; others will follow year by year, steadily increasing in value. The volume for '90 may be had through any dental depot or publishing house, or of the author. The cost is $2.50.

THE

Odontographic Journal.

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FEVERS OF (a) FATIGUE, (b) EXHAUSTION, (c) NON-ELIMINATION.

In the course of a series of lectures on "The Chemical Factors in the Causation of Disease," Prof. Victor C. Vaughan, of the University of Michigan, discourses as follows on a phase or two of the subject that ought to have a personal interest to many dentists and a patient interest to very many more. It puts "prostration" on an intelligible basis:

That certain febrile conditions are autogenous there can be no doubt. These, like other diseases originating within the system, may be due to either of the following causes: *First.* There may be an excessive formation of poisonous substances in the body. Thus, Bouchard has shown that the urine excreted during the hours of activity is much more poisonous than that excreted during the hours of rest. Both physical and mental labor are accompanied by the formation of these deleterious bodies, and if the hours of labor are prolonged, and those of rest shortened, there will be an accumulation of effete matters within the system. *Second.* The accumulation of the poisonous matters may be due to deficient elimination. *Third.* Some organ whose duty it is to change harmful into harmless bodies may fail to properly perform its functions. Illustrations of diseased conditions arising from these several causes will be given.

(a) FATIGUE. First, we may mention fatigue fever, which is by no means uncommon, and from which the overworked physician not infrequently suffers. One works night and day for some time; elimination seems to proceed normally; but after a few days there is an elevation of temperature of from one to three degrees, the appetite is impaired, and then, if the opportunity for rest is at hand, sound and restful sleep is impossible. The tired man retires to his bed expecting to fall asleep immediately, but he tosses from side to side all night, or his sleep is fitful and unrefreshing. The brain is excited and refuses to be at rest. The senses are alert and all efforts to sink them in repose are unavailing. Fatigue fever is frequently observed in armies upon forced marches, especially if the troops are young and unaccustomed to service. Mosso has studied this fever in the Italian army. He states that in fatigue the blood is subjected to a process of decomposition brought about by the infiltration into it from the tissues of poisonous substances, which when injected into the circulation of healthy animals induce malaise and all the signs of excessive exhaustion. It is possible that in this decomposition of the blood the fibrin-ferment, which, according to Schmidt, is held in combination in the colorless corpuscles, is liberated; and it has been shown by Edelburg, that the injection of small quantities of free fibrin-ferment into the blood causes fever, while the injection of larger quantities is followed by the formation of thrombi, as has been demonstrated by the experiments of Edelburg, Bonne, Birk and Koehlar.

Fatigue fever is often accompanied, especially during the period of elevation, by chilly sensations, and consequently it is pronounced malarial and quinine is administered, but it does no good, often harm by increasing cerebral excitement. The proper treatment is prolonged rest with proper attention to elimination.

Then there is the fever or exhaustion, which differs from fatigue fever only in degree. It is brought on by prolonged exertion without sufficient rest and often without sufficient food. The healthy balance between the formation and elimination of effete matter is disturbed, and it may be weeks before it is re-established; indeed, it may never be regained, for some of those cases terminate fatally. The fever of exhaustion may take on the typhus form, delirium may appear, muscular control of the bowels may be lost and death may result.

(b) Exhaustion. That the fever of exhaustion may be mistaken for typhoid by some of the ablest clinical teachers is shown by Peter in the following quotation: "It was in 1852," says he, "when entering upon my clinical studies, and ardent in my attendance at the clinic of Chomel, I was witness of the following instance: A young man was received under the celebrated professor's charge, suffering from prostration, muscular pain and rachialgia. Chomel made the examination with all the care and attention used by him, then, as was also usual with him, in the presence of the patient, he gave the diagnosis in Latin, which was *aut febris peyerica aut varrola incipientis*, either typhoid fever or incipient small-pox. I felt rather dissatisfied at a diagnosis so little precise, by one so eminent in his art. The truth of the matter was, though Chomel was not aware of it, this young fellow in a state of destitution had walked from Compeign to Paris, sleeping by the wayside at night and nourishing himself with such refuse food as chance supplied. It was under such circumstances the patient had developed febrile symptoms. The day after his admission, and simply from rest in bed, he felt better. and the day following he was altogether well."

That all cases of the fever do not terminate so rapidly as that instanced above by the great French teacher, is shown by one which I happen to have under my care at the present moment. A lady, rather frail in body, but without any organic disease, spent the greater part of the time day and night for ten days in the sick-room of her child who died with diphtheria. Since the death of the child, the mother has been confined to her bed with a fever which varies from 99° to 102.5°. She has no soreness of throat or other evidences of infection with diphtheria. She has no symptoms of typhoid fever, and with the exception of slight constipation, which has been easily relieved, her bowels have remained in good condition. She took but little food during the sickness of the child and has had no desire for food since. Her temperature is but slightly affected by two-grain doses of antifebrin and the highest point reached each day is very variable. The mind is clear and she has been altogether free from headache. Her temperature is lowered by a few hours' sleep. This condition has now continued for nineteen days. I have pronounced this a case of fever from exhaustion, and, if this diagnosis is not correct, I must admit that I do not understand the nature of the case.

A case, similar to the above, I saw some time ago in a young man who had been leading quite an inactive life as a student, and who did a very foolish thing in walking one day a distance of more than thirty miles. The next morning he had a fever, which varied from 99° to 103°, and which continued for more than one month. The physician in charge pronounced this a case of typhoid, but of the correctness of his diagnosis there was not the slightest evidence. In this instance, quinine was first employed, but it increased the wakefulness and restlessness, and was followed by an elevation in the temperature.

I have known at least one case of this kind to terminate fatally, and a most thorough *post-mortem* examination failed to reveal any definite lesion.

(c) NON-ELIMINATION. Then, again, there is the fever of non-elimination, which all physicians of experience have observed. There is a feeling of languor, the head aches, the tongue is coated, the breath offensive, and the bowels constipated. The physician fears typhoid fever, but finds that a good, brisk cathartic dissipates all unpleasant symptoms, and the temperature falls to the normal. This fever is also liable to appear among those who are confined to bed from other causes. Brunton says: "No one who has watched cases of acute diseases, such as pneumonia, can have failed to see how a rise of temperature sometimes coincides with the occurrence of constipation, and is removed by opening the bowels." The surgeon and obstetrician have often had cause to rejoice when they have found a fever, which they feared indicated septicæmia, disappearing after free purgation.

Bouchard has shown that normal fæces contain a highly poisonous substance, which may be separated from them by dialysis, and which, when administered to rabbits, produces violent convulsions. He estimates that the amount of poisonous alkaloids formed in the intestines of a healthy man each twenty-four hours, would be quite sufficient to kill, if it was all absorbed. He proposes the term stercoræmia for that condition which results from arrest of excretion from the intestines.

It is more than probable that the poison of the intestines are due to the bacteria which are normally present ; but this would not exclude the fever of non-elimination from the list of autogenous diseases. The bacterial cells, which are normally present in the intestines, cannot be regarded as invaders from without.—*Journal of the American Medical Association.*

HOW GAS CYLINDERS ARE MADE.

The supply of compressed gas in metal cylinders has now assumed the proportions of an important industry, more especially since it was found possible, by the Brin process, to obtain oxygen direct from the atmosphere. The industry is not exactly a new one, for carbon dioxide and nitrous oxide (the latter for the use of dentists) have been supplied in a compressed state for many years. Now, with the creation of the modern amateur photographer, who can make lantern slides, and the more general adoption of the optical lantern for the purposes of demonstration and amusement, there has arisen a demand for the limelight such as was never experienced before, and as the limelight is dependent upon the two gases, hydrogen and oxygen, for its support, these gases are now supplied in large quantities commercially. At first the gas cylinders were made of wrought iron; they were cumbrous and heavy, and the pressure of the inclosed gas was so low that a receptacle to hold only ten feet was a most unwieldy concern. But times have changed, and a cylinder of about the same size, but half the weight, is now made to hold four times the quantity of gas at the enormous initial pressure of 1,800 pounds on every square inch. This means the pressure which an ordinary locomotive has to withstand multiplied by twelve. The change is due to improved methods of manufacture and to the employment of mild steel of special quality in lieu of the wrought iron previously employed. The cylinders are now made without joint or seam, and the process of manufacture is most interesting. A short time ago we had an opportunity of watching the various necessary operations involved in making these cylinders at the Birmingham works of Messrs. Taunton, Delamard & Co., by whose courtesy we were enabled to make notes of the process.

Beginning with the raw material we were shown a disk of metal measuring thirty inches in diameter and three-quarters of an inch in thickness. From such a "blank" a cylinder destined to hold 100 feet of compressed gas can be constructed, and the first operation is to heat the "blank" in a furnace, and afterward to stamp it into cup-like form. To all intents and purposes this represents the end of a finished cylinder, but it is far too bulky to form the end of one of the size indicated; indeed, it in reality contains enough metal to make the entire vessel. By a series of operations it is now heated and drawn out longer and longer, while its thickness diminishes and its diameter grows less. These operations are carried out by means of a number of hydraulic rams, which regularly decrease in size. The plunger may be compared to a finger and the cylinder to a glove, while the well may represent a hole into which both are thrust in order to reduce the thickness of the glove. With huge tongs the cylinder, fresh from the furnace, is placed in position, but just before the plunger presses into the red hot cup, one of the workmen empties into the latter a little water, so as to partially cool the bottom and prevent its being thrust out by the powerful plunger. Oil is also used plentifully, so that as the plunger works slowly down the red hot mass, it is surrounded by smoky flames. It presently forces the cylinder into the well, and when the end of the stroke is reached, a stop piece is inserted through an opening in the upper part of the well, so as to arrest the edge of the cylinder while the reverse action of drawing out the plunger is proceeded with. Directly the finger is drawn out of the glove—in other words, immediately the plunger is raised out of the cylinder—the latter drops down below with a heavy thud, still in a red hot condition.

This operation of hot drawing is repeated again and again in rams of diminishing size until the cylinder assumes the diameter and length required. This hot drawing leaves the surface of the metal marked with longitudinal lines, not unlike the glacier scratches on a rock, albeit they are straighter and more regular. But the next operation not only obliterates these markings, and gives the metal a smooth surface like that of polished silver, but it also confers upon the material a homogeneity which it did not before possess, and without which it would never bear the pressure which it is destined to withstand when finished. This operation consists in a final application of the hydraulic ram while the metal remains perfectly cold, instead of red hot, as in the previous cases.

As the result of these various hydraulic operations, we have a perfectly formed cylinder closed at one end, and we now follow it into another department of the works, when its open end is once more brought in a furnace to a red heat. The object of this is to make the metal soft while the shoulder and neck of the vessel are formed. To accomplish this, the heated open end of the cylinder is laid horizontally upon a kind of semicircular cradle, and is held there by tongs handled by two men. Another workman places over the open end a die and while the cylinder is slowly turned round in its cradle, two sledge hammers are brought down with frequent blows upon the die, closing in the end ot the cylinder, but leaving a central hole. Further operations reduce the opening still more until it is closed altogether, and a projection is formed. This projection is now bored through, and the cylinder is ready for testing.

The cylinder is submitted to a water test, the liquid being forced in until the gauge shows a pressure of two tons to the square inch. Cylinders have been known to give way under this ordeal, but without any dangerous consequences The metal simply rips up, making a report at the moment of fracture as loud as a gun. The wonderful strength of the metal employed may be gauged by the circumstance that the walls of the cylnder designed to hold 100 feet of gas are only five-sixteenths of an inch in thickness.

During the manufacture of the cylinder, as we have already indicated, much oil is used, and so far as steel can be saturated with that fluid—in the popular sense—the metal is in that state. It is essential that this oil should be completely got rid of, and this is carefully done before the cylinder is charged with gas. Previous to such charging, the vessel has to be fitted with its valve. Of these valves there are three kinds, known respectively as the Brin, the Birmingham, and the Manchester. Each has its admirers, but we cannot here discuss their individual merits.

The charging of the cylinder is brought about by a powerful pump having three cylinders so arranged that the compressed contents of the first cylinder are still further compressed in the second, and still more highly in the third. The filling of a 100 ft. cylinder occupies about half an hour.—*Photographic News.*

NATIONAL ASSOCIATION OF DENTAL EXAMINERS.

The National Association of Dental Examiners held its tenth annual session at Saratoga Springs, commencing Monday, August 3, 1891.

In the absence of the regularly elected officers, Dr. L. D. Shepard was elected president, and Dr. Levy secretary-treasurer pro tem.

The following State boards of dental examiners were represented:

Vermont.—James Lewis.
New Jersey.—Fred. C. Barlow, Fred. A. Levy.
Ohio.—J. Taft, H. A. Smith, L. E. Custer, C. R. Butler.
Pennsylvania.—Louis Jack, W. E. Magill.
Georgia.—George W. McElhaney.
Maryland.—A. J. Volck.
Massachusetts.—L. D. Shepard, J. S. Hurlbut.
Mississippi.—W. H. Marshall.
Iowa.—J. T. Abbott.
Louisiana.—Geo. J. Friedrichs.

The following State boards were admitted to membership :

Tennessee.—J. Y. Crawford.
New Hampshire.—E. B. Davis.
Maine.—E. J. Roberts, D. W. Fellows.

A committee consisting of Drs. Shepard, Fellows, Crawford, McElhaney and Magill, was appointed to confer with a similar committee from the National Association of Dental Faculties, for the better understanding of questions involving educational interests.

The committee subsequently reported that the conference committees had agreed upon the following resolutions, which were, on motion, confirmed :

Whereas, There can be no question that the main object in view of both the National Association of Dental Faculties and the National Association of

Dental Examiners is the better preparation of the young dentists for usefulness in the community, and that to secure this end it is desirable that the State boards of dental examiners and the colleges should work in harmony; therefore,

Resolved, That it is recommended to the State boards that when a graduate after examination has been refused a license and his college requests information as to the cause of his failure to pass the examination, the boards shall furnish the faculty with a detailed statement of the subjects and questions on which the applicant has failed.

Resolved, That we discountenance the publication by the State boards of the names of colleges whose graduates have failed to pass.

The committee on colleges reported that they had received reports of the number of matriculates and graduates of twenty-eight colleges, as shown below:

NUMBER OF MATRICULATES AND GRADUATES OF THE DENTAL COLLEGES.		Matriculates.	Absentees.	Graduates.	Ratio.
Baltimore College of Dental Surgery,	Baltimore, Md.	224	3	76	34.3
Boston Dental College,	Boston, Mass.	96		31	32.2
Chicago College of Dental Surgery,	Chicago, Ill.	323		94	29.
Harvard University, Dental Department,	Boston, Mass.	44		15	34.
Kansas City Dental College,	Kansas City, Mo.	110	5	43	40
Missouri Dental College,	St. Louis, Mo.	90		26	28.8
New York College of Dentistry,	New York, N. Y.	283	8	85	30.9
Ohio College of Dental Surgery,	Cincinnati, Ohio.	208		75	36.
*Pennsylvania College of Dental Surgery,	Philadelphia, Pa.	252	17	94	40.
†Philadelphia Dental College,	Philadelphia, Pa.	315		146	46.3
University of California, Dental Department,	San Francisco, Cal.	63		16	25.4
University of Iowa, Dental Department,	Iowa City, Ia.	161		58	36.
University of Michigan, Dental Department,	Ann Arbor, Mich.	132	1	29	22.1
University of Pennsylvania, Dental Department,	Philadelphia, Pa.	206	3	83	40.8
Vanderbilt University, Dental Department,	Nashville, Tenn.	135		43	31.8
Northwestern College of Dental Surgery,	Chicago, Ill.	14		3	21.4
Indiana Dental College,	Indianapolis, Ind.	96		40	41.6
Dental Department of Southern Medical College,	Atlanta, Ga.	103		38	36.8
School of Dentistry of Meharry Medical College, Department of Central Tennessee College,	Nashville, Tenn.	5		1	20.
University of Maryland, Dental Department,	Baltimore, Md.	163	4	64	39.7
Columbian University, Dental Department,	Washington, D. C.	19		2	10.5
Royal College of Dental Surgeons of Ontario,	Canada.	67		27	40.
College of Dentistry, Department of Medicine, University of Minnesota,	Minneapolis, Minn.	36		7	19.4
American College of Dental Surgery,	Chicago, Ill.	167		49	29
Aggregate,		3312		1144	34 5
*15 female matriculates. †9 female matriculates.					
DENTAL COLLEGES NOT CONNECTED WITH THE NATIONAL ASSOCIATION.					
German-American,	Chicago, Ill.	22		11	50.
Western Dental College,	Kansas City, Mo.	61	1	9	15.
United States Dental College,	Chicago, Ill.	43		11	25.5
College of Dentistry, University of Denver.	Denver, Col.	12		5	41 6
Aggregate,		139		36	
Whole aggregate,		3451		1180	

Four colleges, members of the National Association of Dental Faculties had failed to report, namely: University Dental College, Chicago; Dental Department, University of Tennessee; Louisville College of Dentistry; and Dental Department of National University, Washington, D. C.

The committee recommended that "as the next session of the colleges makes the commencement of the new plan of three years' college instruction, that this association request the National Association of Dental Faculties to require each school to issue each year an announcement containing a list of the students, classified in the three grades of seniors, juniors and freshmen; that this list also, in each instance, designate the absentees, and that each school be required in the same announcement to publish a list of the graduates of the preceding session."

The committee also reported the following list of colleges which they recommend as reputable:

Baltimore College of Dental Surgery, Baltimore, Md.
Boston Dental College, Boston, Mass.
Chicago College of Dental Surgery, Chicago, Ill.
College of Dentistry, Department of Medicine, University of Minnesota, Minneapolis, Minn.
Dental Department, Columbian University, Washington, D. C.
Dental Department of Northwestern University (now the University Dental College), Chicago, Ill.
Dental Department of Southern Medical College, Atlanta, Ga.
Dental Department of University of Tennessee, Nashville, Tenn.
Harvard University, Dental Department, Cambridge, Mass.
Indiana Dental College, Indianapolis, Ind.
Kansas City Dental College, Kansas City, Mo.
Louisville College of Dentistry, Louisville, Ky.
Missouri Dental College, St. Louis, Mo.
New York College of Dentistry, New York City.
Ohio College of Dental Surgery, Cincinnati, Ohio.
Pennsylvania College of Dental Surgery, Philadelphia, Pa.
Philadelphia Dental College, Philadelphia, Pa.
School of Dentistry of Meharry Medical Department of Central Tennessee College, Nashville, Tenn.
University of California, Dental Department, San Francisco, Cal.
*Northwestern College of Dental Surgery, Chicago (defunct).
University of Iowa, Dental Department, Iowa City, Ia.
University of Maryland, Dental Department, Baltimore, Md.
University of Michigan, Dental Department, Ann Arbor, Mich.
University of Pennsylvania, Dental Department, Philadelphia, Pa
Vanderbilt University, Dental Department, Nashville, Tenn.

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*The diplomas of this college are discredited after 1889.

Western Dental College, Kansas City, Mo.

Minnesota Hospital College, Dental Department, Minneapolis, Minn. (defunct.)

St. Paul Medical College, Dental Department, St. Paul, Minn. (defunct).

The report was adopted, and the committee on schools was enlarged to consist of one member from each State board. Dr. Louis Jack was appointed chairman of the committee, and the president, secretary and chairman were authorized to complete its membership and to fill vacancies.

The following was adopted :

Resolved, That this association requests the several boards represented in this body not to indorse beneficiary students.

The following officers were elected for the ensuing year : L. D. Shepard, president ; W. E. Magill, vice-president ; Fred. A. Levy, secretary-treasurer.

The officers were empowered to select the time and place of the next meeting.

Adjourned.

PROPER CARE OF THE EYESIGHT.

Following is the discussion of an able paper by Dr. Lewis S. Dixon, before the American Academy of Dental Science:—

Dr. Williams.—I wish to express my gratification for the privilege of listening to a paper so scientific, and yet so plainly expressed. The subject is one of great importance to us all, and, though I have not made an especial study of it, the principles referred to by the speaker seem to me perfectly sound. The essayist, speaking of rest and intermittent rest, reminds me of a remark that I heard Dr. John C. Warren make when he was professor of anatomy, in 1844, to the class in which I was a student. He said, "When you are doing an operation lasting for half an hour or more, the eyes will sometimes become blurred as a result of close application, and it may be difficult to see without making an extra effort. At such a time you may do harm by forcing the eyes, and it is better to let them rest on some other object for a brief period, or step to the window and look out for a moment or two. In this way the eyes are refreshed, and you can see as well as ever, and by constantly observing this rule there is no danger of exhausting them." The essayist has embodied that principle in his paper, and shown us that rest must alternate with work in order to gain or keep strength. This has proved an invaluable principle to me. Whenever my eyes become tired, not exhausted, I let them rest for a minute on a distant object.

With regard to light reflected into the eyes, we certainly expose ourselves to many disadvantages from light-colored objects and polished metal surfaces. As the essayist says, the light should not enter the eye, but should be a little above and at the back of the operator, in order that he may work with the least effort. Dr. B. S. Codman told me some years ago that he was obliged to give up the practice of dentistry because he found that looking at white teeth seriously affected his eyes. Whether or not that was the first cause, it showed the fact that a constant use of the eyes upon light objects does affect the sight. Some dentists and surgeons wear white operating coats which reflect the light which strikes them, and have about the same effect as a snowbank under their eyes. Polished metal surfaces and white napkins are likewise to be avoided. We should have the latter shaded a little, so that the light will fall upon the object you are operating on, and not be reflected into the eye.

Dr. Potter.—If I understood Dr. Dixon, he recommended the incandescent as superior to any artificial form of light that we have, and I would like to ask him how the incandescent lights can best be prepared,—whether the ordinary fixture, the plain pear-shaped bulb, is proper for either reading or working, or whether that is too bright ? It seems to me that there is too much glare, and that the bulb ought to be surrounded with a groundglass case in order to take off the brilliancy. It has always been my impression that the pear-shaped globe was rather more trying than some gas-lights.

Dr. Dixon.—The principal point is to so place the bulb that, as you work or read, you cannot see the filament. If it is above or back of you, or placed in any way so that direct rays from the filament do not strike the eye, then the more light you get, the better. It is the direct light from the illuminated source that annoys.

Dr. Williams.—Another point occurred to me, and that is the use of lenses to which the essayist refers. I was taught as a pupil not to imagine that my eyes were microscopes, but to take advantage of the use of the magnifying-glass for looking at small things, just as jewellers, watchmakers, and engravers do, and I always carry a small magnifying-glass with me. I have often operated with a lens on my finger, as an engraver does, and have found its use to be of great service to me. There are aids which civilization affords us, and if we adopt them we certainly have the gain. The young Alpine tourist, in going up the mountain, will always take with him his mountain staff, even if his muscles are all strong and sturdy. That idea of working under magnifying power I once saw put into practical operation by a dentist who used a stand which supported a large, round magnifying-glass, through which he looked into the mouth of the patient and worked as an engraver does. He was formerly an engraver, and after becoming a dentist, and trying for some time to get along without a glass, he was satisfied that he could not do as good work without it. Students should be taught to use a lens, and so improve the quality of their work.

President Seabury.—I was advised, when a young man, to use glasses as soon as I found they would help me, and, realizing the necessity of clear sight in my profession, I resolved never to let my sensitiveness override my needs. The person who advised me said, "Don't wait until you are forced to wear glasses, but put them on as soon as they will help your eyes. Then your eyesight will last longer than if you delay till there is an absolute necessity." I have with me to-night my working-glasses, the upper third of which is cut off so I look through them only when I look down at my work. When I look up I use my natural sight. This arrangement of my glasses involves the principle of alternate rest and use, about which the essayist has spoken, and is very satisfactory to me.

Dr. Werner.—The lesson we derive from the essay of this evening is, that we cannot be too careful of our eyesight. To me it is very plain why the average practitioner finds it necessary to use glasses at such an early period of life. Among the causes, as Dr. Williams has suggested, are the bright materials with which we work and are surrounded,—as, for instance, light operating coats, polished and shiny metallic surfaces on our apparatus, the white surfaces of the teeth. These things demand a constant nervous and muscular co-ordination of the eye. Besides, some dentists read at all times and in all lights, even while traveling on railway trains and horse-cars. Every dentist should have a distant outlook from his operating-room, so that the eye may be turned from the near work and rested on a far away-object. We dentists live in small, ill-ventilated operating-rooms for a considerable portion of our lives, and hence it is that so often dentists look pale and haggard, lacking the bright, rosy color of the physically healthy man. Physiologists tell us that the exhalations from the lungs contain a product of decomposition that when reinhaled is very poisonous to all animal life ; that it will kill in a very short time, even coming from healthy lungs. How much worse its effect when coming through mouths that are diseased and ill-smelling! We need large operating-rooms with ventilation through a fireplace and windows so as not to live in an atmosphere of exhalations.

Dr. Taft.—I should like to ask the essayist if, in his opinion, a fatigued condition of the system brings about a dimness of vision in the hypermetropic eye quicker than in the presbyopic, and in what condition of life dimness would be most apt to manifest itself? I seldom feel any fatigue myself, although I use my eyes very constantly, and work, perhaps, as little with the mirror as almost any man. I know it is not a good thing to do, and have thought that, while feeling little fatigue, perhaps by the continued strain upon the eyes I may be abusing them.

Dr. Dixon.—In simply presbyopia the fatigue is felt only after the age of forty, and it then manifests itself by a dimness of the vision or weariness when engaged in near work. If one does not tax the eyes too much, no serious trouble may be looked for. But in hypermetropia the person is, of necessity, under constant fatigue. As long as his nervous system is able to bear it he may continue using his eyes without noticing any trouble, until some extra demand on, or decrease of, his nervous power makes the defect become prominent. People of sound constitution may have hypermetropia all their lives without inconvenience, and it only comes to their knowledge by having the distant vision fail somewhat when over fifty. All those people who can accept a convex glass and see better with it at a distance have been hypermetropic all their lives; and if they had known it they could have saved their eyes a great deal of unnecessary labor.

In regard to reading in the cars, the only point to remark is this: a normal eye will stand almost any amount of work without becoming fatigued. It is the imperfect eye that gives out. A perfect eye can read in the cars a good deal without serious fatigue or strain; it is able to bear it, though I do not wish to be understood as recommending this practice, for we are not all blessed with perfect eyes, and one might attempt to use an eye with an error so slight that it would be very difficult to find, but which nevertheless would soon give out. As I stated in my paper, the astigmatic eye and the hypermetropic eye never have any rest except when the eyes are closed, and it is the never-ceasing work which they are compelled to do that is at the bottom of the whole trouble.—*International Dental Journal.*

A UNIQUE CASE.

The *British Medical Journal* is credited with the following:—"A nice point of law has recently been debated before a French court. The question was whether an operation on a dead body by an unqualified person came within the meaning of the enactment forbidding the illegal practice of medicine. It appears that a pregnant woman had just died, the cause of death not being stated. The Curé of the village, who had been with her in her last moments, induced a neighbor who was in the room to perform Cæsarean section on the corpse with a view of saving the child. The operation was successful, but the operator was brought before the magistrate and fined fifteen francs for having been guilty of illegal practice of medicine."

To which let us add—Served him right. The idea that a human life should be saved except by "the faculty!"

THE AMERICAN DENTAL ASSOCIATION.

The American Association has suffered in late years from critics who have said that there has been a lack of scientific essays read. The criticism has been sometimes deserved, but it cannot reasonably be made about the meeting just closed, for the majority of the papers read were strictly scientific, and the result of labor and research upon the part of the writers. The members listened with attention and interest that did them credit, and in discussion evinced their comprehension of the subjects treated.

It is greatly to be regretted that all of the papers could not be read on account of a lack of time, or because sections had already occupied the forty minutes prescribed by the constitution to be occupied in the reading of the essays. It cannot have escaped the attention of all who listened to the work of the Association in the discussion of papers and matters of business, that much time was taken up by speakers which might well have been ruled out as not germane to the subject, and profitably given to essays which were withdrawn for lack of time. It is also unreasonable to confine the time of the reading of papers of one section to forty minutes in all, and then allow the discussion on one of those papers to occupy hours, as it sometimes does, the speakers wandering over the whole field of dentistry and some of them continually dragging in an advertisement for themselves or their methods which should have no place in the discussion. The president, Dr. Harlan, twice called one of these men to order, but he persisted with a want of courtesy only seen in the ill-bred egotist, in disregarding the rulings of the president and the forbearance of the Association. One or two speakers at nearly every meeting of the Association, upon a slight pretext, regale the Association with regular Fourth-of-July spread-eagle speeches, and because they "split the ears of the groundlings" and receive from a few an uproarious applause, they sit down with firm-set lips and the suspicion of tears in their eyes, and think they have greatly added to their reputation. These men were correctly named by an old and valued member when he said that "they were asses, and their braying ought to have no place in a dignified professional body."

The president's able address embraced a number of valuable suggestions looking to the more efficient work of the Association. It was referred to an able committee who during the meeting made an elaborate report, recommending many radical changes suggested by the president in his address. The most notable among these recommendations was doing away with the sections as they are now operated, and giving such work into the hands of committees. This suggestion was not favorably considered by the Association, and members generally were of the opinion that improvement in the work as now prosecuted would remedy the objections to the present methods. Another prominent suggestion was to place the business affairs into the hands of a committee in order that so much of the time could not be taken up with wrangling over business matters, but given to the strictly scientific work. This idea was more favorably received. The committee was continued until next meeting in order to more fully and completely finish their work, and for the present no radical change was made.—EDITORIAL, *Western Dental Journal.*

THE INDIA RUBBER TREE.

The India rubber tree cannot stand shade, and unless the seedlings are fully exposed to light and well drained, they cannot grow. Owing to this it is found that in the depths of the forest, where light and air are shut out by the dense crowd of trees of many species, natural reproduction takes place by the germination of seeds carried by birds high up in the crowns of other trees, aerial roots descending in process of time to the ground, and developing into a huge hollow cylinder round the foster stem, which is soon killed. The descent of the roots may take years, but once they have taken hold of the ground, the further growth is exceedingly rapid. In cultivating, the seeds are found to grow much better than cuttings, and these are tended in large nurseries until they are 10 feet high, when they are transplanted into clearings made in the forest, in strips of 40 feet wide, alternating with 60 feet of natural forest, this being found necessary to furnish the necessary moisture, while narrower clearings do not give air and light enough. Trees grown in grass land were found on tapping to yield scarcely any rubber, the difference being attributed to absence of the moisture afforded by the forest. Plants of 1874–75 were found, in April, 1889, to have attained an average height of 61 feet 11 inches and a girth of 11 feet 5 inches, thus having grown at the very rapid rate of 6 feet 1 inch in height and 9 inches in girth per year.—*Demerara Argosy.*

SECRET PREPARATIONS.

The numerous venders in our profession of secret preparations would seem to indicate that there must be purchasers, and that dentistry is on a retrograde movement. Surely we can hardly imagine that individuals are so highly interested in suffering humanity as to give their time gratuitously to this work. I was requested to try an obtundent for sensitive dentine and report my opinion. The assurance was given that the compound contained no "arsenic, strychnine, or any drug that could destroy the nerve." Having made the examination I feel it my duty to give the conclusions to the profession as well as to the discoverer. The following is the result of the trial: Three drops of the obtundent were added to one ounce of water. The test gave a strong acid reaction. The next was for a metal: the electrodes from a battery were attached to two plates of gold-foil, and before the gold was lowered half-way its length into the fluid that portion at the negative-pole became coated with a metal of a dark lead color. In the report made to me Dr. James Truman's name was mentioned as one who by letter abruptly refused to make a trial of the obtundent. I sent to him the gold electrodes and test-papers as evidences that his position in refusing secret compounds was the correct one. To give the name of the dentist referred to might be construed as a breach of confidence.—PALMER (S. B.), *International Dental Journal.*

ARISTOL.

A circular issued by W. H. Schiffling & Co., of New York, has the following :

Some time since, my* attention was drawn to a new, powerful antiseptic, the thymol derivative called Aristol, discovered by Drs. Messinger and Vortmann, of Aachen.

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*Dr. J. V. Kejzler, of Jicin, in *Austro-Hungarian Dental Quarterly.*

It is the best substitute for iodoform, which on account of its disgusting odor, is especially abhorred by patients who have disorders of the mouth or teeth. Aristol has no disagreeable odor and is easily endured by sensitive patients. It has no toxic properties like iodoform, does not irritate, adheres very readily to loose-lying pulps, and has excellent healing properties.

I tried it in all cases of the most varied tooth complaints, in which the hitherto available antiseptics had been used, such as gangrenous pulps, antiseptic for the root canals, disinfection of carious cavities, before introducing the filling, and so on.

On gangrenous pulps, I strewed aristol in powder with a fine brush; for disinfecting the root canals and carious cavities, I used a ten per cent. solution of aristol in sulphuric ether; through the rapid evaporation of the ether, the aristol forms an even coating and rapidly dries the cavity.

For fistulous spaces, I use small rods made of ten parts cocoa butter and one part aristol, by which granulation and healing proceed rapidly. Aristol is insoluble in water, but readily soluble in sulphuric ether, collodium and fatty substances. It is generally used in a ten per cent. solution or directly in the powdered form, externally for wounds, all kinds of swellings, for eruptions, syphilis, ozæna, ottorhœa nasofaryngal syphilis, in gynækology and wherever antiseptics are indicated for external use.

QUESTIONABLE USES OF ARSENIC.

Although a great deal has been written on the general topic of the careless sale of poisons, very little has been said on one phase of the question, which I wish to refer to here.

It is probably well known to all engaged in the practice of medicine or pharmacy that year by year the custom of embalming bodies before burial is becoming more common. Formerly what was resorted to only rarely, and in large cities, is now known and practiced in most small towns and country places. Frequently the operation of embalming consists merely in injecting some fluid into the cavities of the body; but often a much more elaborate process is followed. In any case chemical substances are introduced into the body after death, and it sometimes happens that no little mischief is wrought in this way. Two illustrations will explain what I mean. A few years ago a stomach was placed in my hands for examination, in a case of death from some cause not immediately apparent. One or two physicians called in thought it could be a case of poisoning, although none of the surroundings or facts elicited at the inquest pointed in that direction. However, the coroner ordered an invesgation, and I went to work. I was greatly surprised to find large quantities of arsenic in the stomach and some in the liver even.

A careful scrutiny of the walls and contents of the stomach failed to show any grains of the solid "white arsenic;" everything appeared to be in solution.

Although not usually the duty of the chemist, my instructions in this case made it proper to learn all I could about the matter. So I started a little inquiry, from which it was learned that the body had been removed to an undertaker's before burial. I hunted up the undertaker and questioned him on the subject of embalming. He admitted that he had injected the body, but with a purely "vegetable" solution, which he bought at a wholesale drug house. I asked for and obtained some of the solution, and found it to contain sodium arsenic. This would account for what I found; but was there any there besides? I do not know, but outside facts would lead me to think not.

Suppose I had learned nothing about the undertaker (no one else had thought of him), and had made my report to the coroner's jury on the basis of what I found by analysis alone, it is plain that a gross error would have been committed, and an injustice done the family of the deceased by inciting a suspicion, for which, as subsequent events proved, there were no grounds.

The next case was of a different character. Some two years ago a woman, living in a city in an adjoining State, was found dead by her neighbors. Her husband, with whom she frequently quarreled, left the neighborhood almost immediately afterward, and has not been seen since. It was stated that he had threatened to kill her.

The body was sent to an undertaker and by him interred, but was afterward taken up by order of the coroner, in response to popular clamor.

The stomach was sent to me for examination, and was found to contain notable quantities of arsenic. Some was also found in the liver. Remembering my experience in the case just explained, I wrote to learn if the undertaker had used any embalming fluid. He told the state's attorney that nothing of the sort had been injected. But in some way the subject of my inquiry became known to a reporter, who, in his zeal to get an item, quizzed the undertaker so closely about the matter that the latter weakened, and admitted that *possibly* he had used a little fluid. He had two kinds in his place, and a test of one which I made showed it to be sodium arsenic, while the other contained mercury.

The memory of the undertaker became so confused on the subject that he could tell little or nothing about what he actually did.

On my advice the state's attorney dropped the investigation, because of the probability that no conviction could ever be secured under the circumstances.

The claim was at one time frequently made that it is possible to say of arsenic found in certain organs, whether it was introduced into the body before or after death. This is true only to a limited extent, as it has been shown by careful experiments that arsenic injected into the stomach after death is found before long in the liver, brain, kidneys and other organs. In other words, the *post mortem* diffusion of arsenic must be accepted as an established fact, and it cannot be assumed that the poison found in the brain, for instance, reached there during life.

From this it is plain why the undertaker's practice is an objectionable one. In cases like the last he successfully covers up crime, making its certain detection impossible. To guard against danger in this direction the use of solutions of mercury and arsenic compounds in the undertaker's shop should be prohibited or restricted by law.

The danger is the greatest when the undertaker has no knowledge of the nature of the materials used in his work.

The fact that arsenic and mercury are used by undertakers, places a strong weapon in the hands of unscrupulous criminal lawyers to be used in the defense of guilty clients. If nothing more, it gives an opportunity for a quibble, and aids in delaying or defeating the course of justice. At the present time the public is not much acquainted with the undertaker's practice in this respect, but, as the facts become more widely known, advantage will certainly be taken of them by persons inclined to give the poisons with criminal intent.

It is desirable, therefore, that our medico-legal societies take up the subject, and secure the enactment of laws regulating the practice.—LONG, (J. H.), *The Apothecary*.

"WAITING TO DO SOMETHING GREAT."

Thousands of able writers never publish anything, because they are waiting for the time and opportunity to write something great. The result is, they are no nearer their ambition when they die than when they were born. A quaint friend of ours has a hobby in the shape of an affection for the kangaroo. He owns a pair of them. He is a practical artist in prosthetic dentistry. If you visit his labratory, you may get hints that would enrich the pages of any dental journal. But he has never published a line, either on the kangaroo or on dentistry, though he has over a hundred pages of original manuscript on the teeth of his pet Australian mammalia. One day he demonstrated to several of us the beautiful and curious extension of the pulp chamber in an incisor to the tip of the crown, and showed us how nature had given man greater protection than the kangaroo, in the thickness of the hard structures at this point. He intends "some day" publishing the manuscript, but he has kept it twenty years, and will likely destroy it or leave it for posterity. We know that "great minds run in circles," and if one has a new idea and hopes to get credit for it, he must out with it in the rough, and not wait for the "divine afflatus," or for time to polish. Procrastination is the thief of ideas as well as of time. A claim to priority is only insured by prompt publication.

We imagine that most of us have ideals we can never reach. Most of our readers are reluctant to contribute, because they wish to do something elaborate. Our journals are filled with an immense amount of padding; ideas spread out over a dozen pages, when they could be embraced in as many lines. One of the best thinkers in the profession is a mighty sinner in this respect. Whatever subject he writes about, however practical or scientific, he always starts back at the time of the deluge. He is engaged on a monograph on the teeth of Adam and Eve. It is all very well to have ideals and to strive to attain them. We have had an ideal of a dental journal for twenty years; but that did not block the birth of this bantling. Let us all do the little at our hand, and by-and-by the great may come. If it does not come, it is, at least, some satisfaction to feel that we have done something to make it possible for our successors.—EDITORIAL, *Dominion Dental Journal*

NATIONAL ASSOCIATION OF DENTAL FACULTIES.

The eighth annual meeting of the National Association of Dental Faculties was held at Saratoga Springs, commencing Saturday, August 1, 1891; the president, Dr. L. D. Carpenter, Atlanta, in the chair.

The following colleges were represented at the meeting:

Baltimore College of Dental Surgery.—R. B. Winder.
Boston Dental College.—John A. Follett.
Chicago College of Dental Surgery.—Truman W. Brophy.
Harvard University, Dental Department—Thomas Fillebrown.

Kansas City Dental College.—J. D. Patterson.

Missouri Dental College.—W. H. Eames.

New York College of Dentistry.—Frank Abbott.

Ohio College of Dental Surgery.—H. A. Smith.

Pennsylvania College of Dental Surgery.—C. N. Pierce.

Philadelphia Dental College.—Henry I. Dorr.

State University of Iowa, Dental Department.—A. O. Hunt.

University of Michigan, Dental Department.—J. Taft.

University of Pennsylvania, Dental Department.—James Truman.

Vanderbilt University, Dental Department.—W. H. Morgan.

Louisville College of Dentistry.—James Lewis Howe.

Indiana Dental College.—Junius E. Cravens.

University Dental College.—George H Cushing.

Dental Department of National University.—James B. Hodgkin.

Dental Department of Southern Medical College.—L. D. Carpenter.

School of Dentistry of Meharry Medical Department of Central Tennessee College.—G. W. Hubbard

University of Maryland, Dental Department.—Isaac H. Davis.

Royal College of Dental Surgeons of Ontario.—J. B. Willmott.

American College of Dental Surgery.—T. Clendenen.

Dr. H. B. Noble, of Columbian University Dental Department, was also present, but not as a delegate.

The University of Denver, Dental Department, was reported upon favorably by the Executive Committee, and was elected a member of the association, and its representative, W. F. McDowell, took part in the meeting.

The applications of Western Dental College, Kansas City, and Dental Department Medical College of Tennessee, Knoxville, were reported favorably, and under the rules laid over for one year.

On motion, it was directed that the National Association of Dental Examiners be requested to appoint a committee of five to confer with a similar committee from the National Association of Dental Faculties in regard to matters of mutual interest between the two associations, their conclusions to be reported back to this meeting. The president appointed as the committee on behalf of the Faculties Association, Drs. Pierce, Winder, Eames. Truman, and Morgan.

The committee subsequently reported the following resolutions as having been agreed to by the conference committees, and recommended that they be confirmed, which was accordingly done:

Resolved, That it is recommended to the State boards that when a graduate after examination has been refused a license and his college requests information as to the causes of his failure to pass the examination, the boards shall furnish the faculty with a detailed statement of the subjects and questions on which the applicant has failed.

Resolved, That we discountenance the publication by the State boards of the names of colleges whose graduates have failed to pass.

The committee also reported favorably a communication from the National Association of Dental Examiners, which had been referred to them, as follows:

"As the next session of the colleges marks the commencement of the new plan of three years' college instruction, we recommend that this association request the National Association of Dental Faculties to require each school to issue each year an announcement containing a list of the students classified in the three grades of seniors, juniors, and freshmen; that this list also in each instance designate the absentees, and that each school be required in the same announcement to publish a list of the graduates of the preceding sessions.

On motion of Dr. Cushing, the term absentee in the foregoing was construed to mean one who for any reason has not attended a full course.

The president being asked to rule upon the resolution adopted last year requiring dissections, decided that it was mandatory.

The following, offered by Dr. Abbott, was adopted by a unanimous vote:

Resolved, That any college whose regularly appointed representative fails to sign the constitution within one year from the time of its election to membership shall be dropped from the roll of membership of this association.

Dr. Patterson, from the committee on codification of the rules, presented a report, which was amended and adopted, as follows:

ENTRANCE.

Resolved, That a preliminary examination be required for entrance to our dental colleges. Such requirements shall include a good English education. In case of any applicant failing to pass a satisfactory preliminary examination, the other colleges of this association may be informed of the fact. (Saratoga, 1884; Chicago, 1885.)

Resolved, That a candidate for matriculation who presents a diploma from a reputable literary institution, or other satisfactory evidence of literary qualifications, shall be admitted without further examination. (Saratoga, 1884; Chicago, 1885.)

Resolved, That after the session of 1890–91 a diploma from a reputable medical college shall entitle its holder to enter the second course in dental colleges of this association, but he may be excused from attendance upon lectures and examinations upon the following subjects: General anatomy, chemistry, physiology, materia medica, and therapeutics. (Excelsior, 1890.

ADMISSION TO SENIOR CLASS

Resolved, That the colleges of this association may receive into the junior or senior classes only such students as hold certificates of having passed a satisfactory examination in the studies of the freshman or of junior years respectively; this certificate to be a pledge to any college to which they may apply that a previous year has been properly spent in the institution. (Chicago, 1885; changed, Saratoga, 1891.)

Resolved, That applicants for admission to advanced standing from foreign countries shall be required to furnish properly attested evidence of study, attendance upon lectures, etc., the same as required of applicants here; and they shall pass the intermediate examinations. (Chicago, 1885; changed, Saratoga, 1891.)

FORM OF INTERMEDIATE CERTIFICATE.

Place.................Date.............

This certifies that........................has been a member of the ....class in the................................college during the session of.........

He was examined at the close of the session in the studies required (as follows), and is entitled to enter the...........class.

Attendance ....

Freshman Year.	*Junior Year.*
a.........................	*a*............................
b.........................	*b*............................
c.........................	*c*............................
d.........................	*d*............................
e.........................	*e*............................

Each student completing a regular course in any college of this association must be furnished with the above certificate, without which he shall not be accepted by any college for admission to the advanced class, except by conference with and consent of the school from whence he came. (Chicago, 1885; changed, Saratoga, 1891.)

Resolved, That the dean of each school shall upon request furnish the executive committee with the exact character of the intermediate examination held in his school, and whether or not the examination is final. (Niagara, 1886; changed, Saratoga, 1891.)

ATTENDANCE.

Resolved, That candidates for admission to the colleges of this association, who are undergraduates in a reputable medical college, may be admitted to the junior class subject to the rules of examination governing admission to that class.

Resolved, That no college shall give credit for a full term to any student who has entered later than twenty days after the beginning of regular lectures. (Chicago, 1885.)

Resolved, That no college of this association shall admit a student after twenty days from beginning of regular term, except those colleges having a term of more than five months, and that they shall have an extension of time in proportion to the length of term. (Niagara, 1886.)

Resolved, That attendance upon three full regular courses of not less than five months each in separate years shall be required before examination for graduation. (Saratoga, 1889.)

GENERAL.

Resolved, That the fees of all dental colleges, as far as possible, be uniform. (Chicago, 1885.)

Resolved, That the members of any faculty belonging to this association may take part in its discussions, but only the delegated representatives shall vote upon a question before the association. (Niagara, 1886.)

Resolved, That dental schools which do not conform to the regulations of this association shall not be recognized by the association. (Niagara, 1886.)

Resolved, That a standing committee on schools be elected, whose duty it shall be to ascertain as far as practicable the workings of all dental schools in this country and Europe, and be required to furnish information to the dean or secretary of any college when desired, and to report in writing at each meeting of this association. (Niagara, 1886.)

Resolved, That we agree to adopt a graded course of instruction and an intermediate examination between each course, which course of instruction and examination shall be conducted as the faculties of the different colleges represented in this association may deem proper. (Saratoga, 1884; changed, Saratoga, 1891.)

Resolved, That no charges against any faculty shall be reported to the association by any committee before both parties interested have been notified, and an opportunity given for a hearing before said committee. (Washington, 1887.)

Resolved, That as a matter of courtesy, when a student leaves one school to go to another, the dean of the second college shall write to the dean of the first college, inquiring whether there may be any objections to the transfer; this to be done whether the student presents a certificate or not. (Louisville, 1888; changed, Saratoga, 1891.)

Resolved, That hereafter a delegate representing a college in this association shall be a member of a teaching faculty, and shall present credentials from the college to which he belongs, legally authorizing him to represent his college before he shall be entitled to vote. (Louisville, 1888.)

Resolved, That it shall be obligatory upon the dental schools belonging to this association to publish the names of all their matriculates and graduates of the preceding session, with the states and countries from which they come, in their regular annual announcement, and that an asterisk (*) accompany the name of each person not in attendance, and the words "not in attendance" be placed as an explanatory foot-note at the bottom of the page.

Resolved, That the degree of Doctor of Dental Surgery shall not be conferred by any college belonging to this association honorarily, except by the consent of this association. (Saratoga, 1889.)

Resolved, That the term anatomy shall be interpreted to include didactic and practical anatomy, and that in the latter at least two parts of the cadaver shall be dissected in some regularly appointed anatomical department. (Excelsior, 1890.)

MEMBERSHIP.

Resolved, That all applications for membership in this association shall be made in writing, and referred to the executive committee. (Niagara, 1886.)

Resolved, That applicants for membership in this association shall be regularly incorporated dental colleges or departments of medical colleges or universities, wherein at least one full course of lectures has been delivered, and that such dental colleges or departments shall have been in existence at least one scholastic year. (Washington, 1887.)

Resolved, That no application for membership in this association be reported to the executive committee, unless received at least sixty days before the regular meeting. (Washington, 1887.)

Resolved, That all applications for membership reported upon favorably by the executive committee shall lie over one year before final action may be taken thereon. (Saratoga, 1889.)

Resolved, That we recommend that students take two full courses in studies of a general character, such as anatomy, physiology, chemistry, general principles of surgery, materia medica, and therapeutics, and three courses in those of a special dental character. (Excelsior, 1890.)

Recommended, That for a full course of lectures the minimum sum of college fees be $100.00. That diploma fees may be omitted, and an examination fee of not less than $25.00 be substituted therefor and made non-returnable; that a matriculation fee of $5 00 be charged annually. Special-course fees to be $10.00 for each branch taken, and $5.00 matriculation fee.

The American college of Dental Surgery, Chicago, was suspended from membership for two years for violation of the rules of the association in accepting students after the prescribed time and giving them credit for a full term.

A resolution dismissing charges against the Philadelphia Dental College was adopted.

The following were offered and laid over for one year under the rules.

By Dr. Hunt:

Resolved, That in case of charges against any college no final action shall be taken until all parties concerned shall have had at least thirty days' notice.

By Dr. Truman:

Resolved, That at all future meetings of the National Association of Dental Faculties the delegates shall consist of members of faculties, and demonstrators will not be received.

By Dr. Fillebrown:

Voted, That after June, 1893, the yearly course of study shall be not less than seven months, two months of which may be attendance upon clinical instructions in the infirmary of the school, now known as intermediate or infirmary courses.

By Dr. Hunt:

Resolved, That after the session of 1892-93, four years in the study of dentistry be required before graduation.

Dr. Dorr offered a resolution that students who have successfully passed their examinations for advanced standing shall have their certificates given or mailed to them within thirty days after such examinations shall have been completed. Adopted.

The following officers were elected for the ensuing year: W. H. Eames, St. Louis, president; J. D. Patterson, Kansas City, vice-president; J. D. Patterson, Kansas City, secretary; H. A. Smith, Cincinnati, treasurer; J. Taft, A. O. Hunt, and Frank Abbott, executive committee.

The president appointed the following standing committees: Ad Interim Committee, James Truman, Frank Abbott, and Thomas Fillebrown; Committee on Schools, D. R. Stubblefield, J.A. Follett, J. Lewis Howe, J. E. Cravens, S. H. Guilford.

Adjourned to meet at the place of the next meeting of the American Dental Association, on the Monday previous, at 10 o'clock.

THE SCIENTIFIC AND THE PRACTICAL.

An esteemed correspondent, in a letter giving his views upon the true function and ultimate object of dental journalism, expresses his sentiment regarding the relative values of the scientific and practical, as follows: "I despise the word practical, and all the effort that is made to bring everything down to a practical use. My hand is against the practical, the utilitarian idea of turning everything to the mere benefits of practice and the exclusion of everything that has not an immediate practical bearing." "A journal cannot be practical without losing its tone and degenerating; therefore let it be scientific in the highest sense."

Inasmuch as these sentiments may be shared by other readers of the *Dental Cosmos*, and as an apparent contradiction of meaning attaches itself to the sentences quoted, a definition of the terms scientific and practical and an examination of what to us seems to be their proper application becomes pertinent. By science, is understood an orderly arrangement of facts which represents our knowledge of ascertained truth; that which is known. We regard it as pure or applied; the latter is our knowledge of facts or phenomena as accounted for by their causes, and the systematic expression of the relation subsisting between cause and effect in natural phenomena we term natural law. Pure science is the consideration of natural powers, causes, or laws, apart from all applications.

Practical, as defined by Webster, means, among other things, "capable of being turned to use or account; useful, in distinction to ideal or theoretical."

Our correspondent apparently regards the terms scientific and practical as directly opposed to each other and wholly incompatible. The error of this view becomes at once evident upon even a superficial examination, and it is seen that if not interchangeable they are at least interdependent terms. The definition of them which each one makes for himself depends entirely upon the stand-point from which he views them, and this in turn upon his motive in their pursuit or study.

In a broad sense all science is utilitarian, just as all truth is, in its ultimate analysis; and in this regard it is in the highest degree, practical. As Sir William Hamilton says, a utilitarian is "simply one who prefers the useful to the useless; and who does not?"

All study, all work, must necessarily have an object which bears to it a casual relation. The whole order of nature is a protest against the idea of effects without adequate causes, and the utilitarian element in scientific as well as in practical work is an integral quality of both and their most potent factor for development and progress.

Utilitarianism as a motive power in human progress is conditioned by the character of its object; it is high and worthy, or selfish and degrading, accordingly as it chooses for its aim the ultimate good of the race or the personal benefit and aggrandizement of the individual worker. These two classes of workers, both scientific and practical, certainly exist; there is much work done in all departments of science that is unworthy the name of science,—mere guesswork, the statement of which is couched in mystifying language, and produced solely for the purpose of exalting the personality of the writer, rather than for the higher object of conferring educational or other utilitarian benefit upon humanity. It is work done in this spirit which perhaps more than any other element is a bar to higher advancement in any line of thought, and of this, unfortunately, dentistry has its full share. Again, scientific work done with no motive ulterior to the selfish one of personal benefit is productive of a scientific pedantry whose characteristic exponent is the individual of the holier-than-thou order.

The expressions, "culture for its own sake" and "the study of science for the sake of science," are misleading unless they are meant to include a broad, practical, utilitarian and altruistic object which is "scientific in the highest sense." Considered apart from this, they are productive of a selfish and pedantic culture, simply because they are minus the one object which should animate all study and investigation, the ultimate benefit of the race. Viewed from the stand-point thus outlined, scientific investigation and knowledge are intensely practical, and it becomes impossible to divorce the thought of one from that of the other; and by the same line of reasoning all practical work becomes preëminently scientific, for both lines coincide upon the plane of that higher utilitarianism whose object is the development of the race and the promotion of human progress.—EDITORIAL, *Dental Cosmos.*

A NEW ANTISEPTIC, MICROCIDINE.

[TRANSLATED FOR THE ODONTOGRAPHIC JOURNAL.]

By adding to naphthol B, at fusion temperature, half its weight of caustic soda, and then allowing it to cool, a whitish powder is obtained. This is mostly napholate of soda, the residue being naphtholic and phenolic compounds that play a role in the properties of the new substance which its discoverer proposes to call microcidine. It is soluble in three times its weight of water. The solutions are nearly colorless; concentrated solutions are brownish. From the hygienic point of view it has the double advantage of being inexpensive and but little toxic.

The antiseptic power of microcidine is inferior to that of bi-chloride of mercury and of naphthol; but it is about ten times greater than that of phenic acid. Its toxicity is less than that of naphthol, and incomparably less than that of bi-chloride of mercury. Microcidine is in great part eliminated by the urine.

As to the clinical point of view, the discoverer has employed microcidine in solution three to a hundred. He has observed that, under this dressing, ulcers of the legs and suppurating wounds recovered kindly from gangrene, their edges were not irritated; the patients did not suffer For recent wounds, not infected, microcidine merits a place among the most useful and most inoffensive of antiseptics.—*L' Odontologie.*

ERUPTION OF A CANINE AT THE AGE OF 70 YEARS.

[TRANSLATED FOR THE ODONTOGRAPHIC JOURNAL.]

Presented by M. Viau.—M. C. has worn a plate for the past six years, and I do not remember to have made any re-adjustment during that time. Some weeks ago the right side of the superior maxillary (containing neither teeth nor roots, as you see by this impression) became sensitive in the region of the absent canine. I examined the plate several times in the spot where the patient complained of the pain, and each time, after I had taken off a slight thickness with the burin, he went away feeling better; but only to return a few days later. At length having perforated the plate, I determined to get at the reason of a fact so absurd, that a plate which had fitted for six years, should suddenly, without apparent cause, give rise to serious trouble.

Questioning my patient, I felt almost certainly assured that he had had all his teeth. The five which remained bore additional testimony to a dentition vigorous and normal. Having to do with a gouty subject, it occurred to me that the occasion of the disturbance might be a case of osteitis of the alveolar margin. Although it would be a rare thing to find such a case so long after the resorption of the alveoli (more than six years), the painful region presented a prominence which decided me to make a deep incision, and by using a rasp I felt a very hard tissue which left no room for doubt. It was either osteitis or a tooth. I immediately resolved to have a small portion of that substance for examination. Lo and behold! It was the crown of a canine. I here present you the body of the delinquent, not easy to capture, I assure you.

M. Hugo Swayearski.—Was there no accident after the operation ?

M. Viau.—None. The operation was very difficult, but the subject was robust.

M. Hugo Swayearski.—You said he was gouty.

A Member.—I have encountered an identical case in a woman likewise gouty.—*L' Odontologie.*

HOT SUBLIMATE.

Doctor Ahla has established the fact, by extensive bacteriological and chemical investigation, that the application of heat to solutions of sublimate augments their antiseptic power, at the same time that it diminishes their toxic and corrosive effects. These are the conclusions he draws:

1. The antiseptic action of a solution is increased, if it is heated to a temperature of 40. C.; 2. A solution of 1 to 20,000, or even 10,000, heated to 40 C., can be employed without danger in wounds penetrating the lungs, the pleura and the peritoneum, its bactericidal effect corresponding to that of a cold solution of 1 to 500; 3. A solution heated to about 40, stimulates the general action of the tissues and accelerates the curative process. On the other hand, a cold solution of 1 to 1,000 has less antiseptic action than a hot solution of 1 to 10,000, because the latter penetrates more deeply; 4. Cut surfaces reunite more rapidly than after the employment of cold

solutions of 1 to 500, because the hot solution produces no caustic effect; 5. Hot and weak solutions of sublimate may be employed with perfect security in regard to toxic effect.—*Mèdicine Moderne.*

TREATMENT OF CONSTRICTION OF THE JAWS.

[TRANSLATED FOR THE ODONTOGRAPHIC JOURNAL.]

M. Le Dentu has communicated to the *Sociètè de Chiruregie* a new process of treatment of constriction having cicatricial origin. The method of Esmarck and of Rizzoli did not seem to give very remarkable functional results, and he determined, in a case of absolute retraction of the masseter of the left side, following alveo-dental periosteitis, to operate upon the muscle itself, not by dividing it, but by applying to general surgery the process of treating strabismus.

To that end, he disengaged from the superior maxillary, with a scalpel, the insertion of the masseter as far as the coronoid apophysis, passed around the anterior margin, and obtained complete mobility and a separation of three to four centimetres.

In order to maintain this, he inserted the unilateral gag of Mathieu, so as to be immovable, then some wooden wedges.

The separation is to-day only two centimetres and a half, but sufficient. This process is applicable only to cases in which the buccal mucous membrane is healthy.—*L' Odontologie.*

EXPLOSION OF PASTILLES OF CHLORATE OF POTASSIUM.

A patient afflicted with ulcerous stomatitis was put under treatment by pastilles of compressed chlorate of potash. He carried some of them in a paper in his pocket along with a penknife. As he seated himself heavily one day, upon a hard seat, a report was heard, and before he could divest himself of his clothing he was seriously burned, over an extent of six by nine inches, to the third degree. It was the chlorate of potash which had exploded from the shock, and had taken fire.—*Union Mèdicale.*

WHAT THE TEETH SIGNIFY.

If the gum is visible above the upper teeth upon opening the mouth, it is a sign of a cold and phlegmatic temperament.

Short and small teeth show weakness and short life; long teeth, if regular, long life.

The more the teeth approach those of the flesh-eating animals in sharpness, size, form and arrangement, the stronger are the animal instincts in the individual; if they resemble those of the herbiverous animals, the disposition is peaceable.

White, medium sized, regular teeth, which show, when the mouth is open, without the gum being visible, are indicative of a good and honorable nature; outstanding teeth indicate passion, small ones, set backward, only seen in laughing, feebleness and deficiency in both physical and moral courage.

When the lower teeth stand out and shut over the upper teeth, it betokens a cruel and harsh disposition.—*Zahntechnische Reform*, from *Manchester Guardian.*

DEVITALIZING PASTE.

In the *Dental Cosmos* for 1887, p. 211, I published a formula for "nerve paste" which was a combination of cocaine, menthol, and arsenious acid made into a paste with glycerin. Up to the time of publication I had used the formula with most satisfactory results in a large number of cases, but had carefully avoided its use when acute pulpitis existed, my rule being in such cases to institute a sedative treatment previous to the application of the devitalizing agent. The uniformly good results obtained from its use when limited as stated led to its more general application, with the result that in nearly all instances where it was applied to pulps already aching the pain was greatly intensified. A number of substances were tried experimentally, with the object of producing a devitalizing paste which should be capable of immediate application to the pulp in all cases whether actively inflamed or not, and whose use should be devoid of painful results. Of all the formulas tried, none have proved so uniformly satisfactory as a combination of arsenious acid with the so-called Robinson's remedy, mixing sufficient arsenic with the Robinson's remedy to make a stiff paste. This paste is then worked into cotton fiber until it will hold no more, after which the cotton, so treated, is loosely twisted into a cord and cut up into pieces about the size of a small mustard-seed. These little pieces form a most convenient means for making the devitalizing application. They are slightly adhesive, and one can be accurately applied over the point of exposure and sealed in position in the usual manner. Out of somewhat more than one hundred applications made as stated, there has not been a single case of distressing pain resulting. When applied to an aching pulp the effect is sedative, the pain gradually subsiding until it gradually disappears in about thirty minutes. Two explanations for its sedative property may be reasonably assigned. First, the Robinson's remedy is strongly alkaline, and the excess of alkali acts as a sedative to the pulp, a property which is shared by all the soluble alkalies and their carbonates; and second, when the arsenic is mixed with the Robinson's remedy it enters into combination with the free potassium hydrate to form potassium arsenite, which is soluble. The arsenic is therefore presented to the pulp in a soluble form requiring no effort upon the part of that organ for its absorption, and consequently its irritating effect is reduced; but whatever may be the exact explanation, the satisfactory action of the comblnation is beyond question, and has led me to use it exclusively and without hesitation in all cases of pulp-exposure when devitalization is the correct procedure.—*Kirk* (*E. C.*), *Dental Cosmos.*

FIAT CAUDA GALLI—OTHERWISE "J. K."

A clever convalescent in the University Hospital borrowed a United States dispensatory, and wrote a regular prescription for a matutinal cocktail, with the appropriate Latin formula for the ingredients. His ingenuity was rewarded, the prescription was put up and delivered, and the order, with its "fiat cauda galli," now hangs on the druggist's hook.—*Times and Register.*

GRAFTING CANCER—A MEDICAL SCANDAL.

The *British Medical Journal* is credited by the *Medical Record* with the following: "When we read in the *Echo de Paris*, of June 26th, a paragraph headed, 'Le Scandale de l'Académie de Médecine,' we hoped that the story which it told was either wholly untrue, or, at the worst, grossly exaggerated. The *Bulletin* of the Académie de Médecine, however, published on June 29th, contains the official report of a paper read by no less a person than M. V. Cornil, at the meeting on June 23d. This paper reports proceedings which we can only characterize as an outrage, not only upon the unhappy persons therein referred to, but also upon the whole medical profession. It is a paper to which, if proper supervision had been exercised by the officials, the fictitious importance conferred on it by being read at the Académie would never have been given. The facts of the case are, briefly, that 'un chirurgien étranger,' who conceals his identity, took advantage of the insensibility of two patients, from each of whom he was removing a tumor of the breast, to graft a portion of each tumor into other, and apparently unaffected, parts of their bodies. He states that each of these grafts took effect; in one case the patient died, but not of the grafting; in the other case the patient was still living, at the time of the report four years ago, but she refused to undergo any further operation. We cannot reprehend too strongly such an abominable action as has been perpetrated in these cases; the immorality is obvious, and the scientific result quite valueless."

KOCH VS. VIRCHOW.

We notice, just at present, in many of our exchanges, a vein of jest, if not abuse, directed against the greatest of modern experimenters—Professor Koch, of Berlin. Ever since the publication of Virchow's manifesto, denouncing everything connected with the "lymph" question, the tirade of abuse began. Perhaps it will be well to bear in mind that Prof. Virchow was equally as denunciatory of Prof. Koch and his methods in 1882, when the latter, through his wonderful discovery of the bacillus, let the bottom fall out of Virchow's pet tuberculosis theory. Time has proven who was right, and we have no doubt but that in ten years from now, time will again demonstrate that all advancements do not emanate from Prof. Virchow.

In a recent debate in the lower house of the Prussian Diet, Prof. Virchow denounced Kochism as a failure, and opposed with all his power (?) the granting of 165,000 marks for Prof. Koch's Institute. Happily, Prof. Virchow is not as successful in politics as in science, and the honor of German medicine was sustained. We do not propose to belittle the magnitude and influence of Virchow's achievements, but when we see him at his old tricks, and this time transferring a scientific question into the political arena, we think he had better be in other business.

We still hold to the belief that Prof. Koch is on the right trail, and judging the man by his past efforts, we will be sadly mistaken if his experiments are not crowned with success. It requires time to work out such problems as "the cure of tuberculosis," but when pluck, brains and modesty are all combined in one head, we need not fear the result. Prof. Koch deserves as much honor and appreciation now as he did before his adversaries took him to task on a point which was unwillingly wrenched from him.—*Buffalo Medical and Surgical Journal.*

CEMENT LINING FOR DECIDUOUS AND PERMANENT TEETH.

In filling teeth for the adult there is great responsibility. But to the conscientious dentist there is a greater responsibility, when called upon to fill the teeth of the young. Experience teaches that the teeth of the young are as a rule soft and not so thoroughly compact and established as those of the adult.

Therefore it behooves us as dentists, to guard against and assist nature so far as we can, in preserving and building up these tender organs. This is accomplished in a degree by excluding air and other substances from entering the defective tooth. This in my opinion is best accomplished with a cement lining first, then completing with any permanent or gold filling.

How many of us have noticed the change for the better in the dentine on removing the remains of a cement filling. Therefore with these facts before me, it has been my practice for some time, to line the cavity with a thin coating of cement, as follows: Prepare the cavity as usual after adjusting the dam, and mix the cement quickly, being careful not to get too much liquid and do not insert until the material is of the consistency of putty. Cut the material in small pellets and gently press to all sides, allowing it to come to the edge of the enamel, leaving space·enough for the amalgam or gold to come in contact with the tooth at margin. Thus you have a complete union of both tooth and filling. In using amalgam, both materials can be inserted at one sitting, and before the lining is thoroughly set.

This method is most practical in frail teeth with thin walls.

Then in cases where it is not possible to get retainers or undercuts where we desire them, you can rely on the cement for such partial assistance. Insert cement as for complete filling and after a few days prepare a cavity in the cement as above described, being careful not to leave any cement exposed, but all to be covered by the permanent filling.

I can recall fillings inserted several years ago, as temporary ones, until I could get time to to introduce permanent ones, to-day there remains cement adhering to the teeth and sides of the cavities, thus preserving that part of the tooth as no other filling can.—MOORE (L. S.), *Dental Review.*

DEATH DURING CHLOROFORM NARCOSIS.

Two deaths from chloroform which recently happened at the Manchester Infirmary have created much stir in the British professional press. As is well known, our English confrères, like those in Germany and some other countries on the Continent of Europe, generally prefer chloroform to ether as an anæstetic, in spite of the fact that the former has produced more accidents than the latter. It is however considered more efficient and prompt, and less frequently accompanied by disagreable after-effects. The question now agitates the profession whether these deaths were due to some impurity in the chloroform, and speculation is rife whether "methylated" chloroform (not made from alcohol, but from "methylated spirit," on which the internal revenue tax is saved by the manufacturer) has been employed. This kind of cloroform has generally been regarded as being less pure than that made from pure ethylic alcohol. The methyl base, during chlorination, is believed to be partly converted into chlorinated compounds which cannot be entirely removed, and which render the product dangerous. It must be stated, however, that the nature of these compounds has not been made out, and that their toxicity is not proven. Moreover, there are many deaths on record caused by chloroform assuredly made from pure ethyl alcohol and carefully purified before being administered.

We cannot help believing that many of the recorded deaths from anæsthetics were not so much due to an impurity present, but to other causes, such as faulty or careless administration ; the presence of particular lesions or functional disorders of the respiratory organs or of the circulation in the patient ; or, finally, to the fact that chloroform as well as ether may act as a poison, under unfavorable conditions, even when there is not the slightest impurity revealed by the most searching tests.—*American Druggist.*

ART IN BRIDGE AND CROWN WORK.

At the late meeting of the American Dental Association, Dr. Corydon Palmer, of Warren, Ohio, a practitioner of more than half a century, feelingly pled for a discontinuance of the rapidly growing disposition to place large masses of gold into prominent positions, in or upon the front teeth. Any observing person has undoubtedly noticed that Bridge work has led to the banding and disfiguring of the anterior teeth in a degree which threatens a marked change in the appearance of the people. We are inclined also to believe, that for the sake of accomplishing satisfactory results, teeth are sometimes cut off or banded that should never have been touched. It will be well if we take heed before we have done too much injury, and see if oftentimes something less unsightly than a wide band or bridge will not answer the purpose just as well. Study methods of bridge work which will combine utility and stability without too much disfigurement of the features. This is also to be a consideration when crowns are in question. Undoubtedly a crown with a band is the best crown we have, but it is not necessary that the band should be so wide as to at once indicate that the tooth is artificial. Large gold fillings in front teeth, we might say, are "out of style." There is a point where it is difficult to determine whether it would be best to introduce a gold filling or whether to cut off the remnant and crown the tooth, and good judgment should be exercised to do that which will be most serviceable yet not too unsightly. For extremely large labial fillings in the anterior teeth porcelain inlays are admirably adapted and should be used. By a judicious combination of art technique with an endeavor to produce something useful as well as beautiful, the dentist will be led to avoid the exposure to sight of gold whenever possible.—Editorial, *Dental Review.*

Funk & Wagnalls are publishing "The Standard Dictionary," the degree department of which will be edited by Florel S. Thomas, Ph. D. Dental degrees, including the " M. D. S.," will have proper mention and description.

The following is given in a medical journal as " Late Progress in Dentistry."

One of the great discomforts of artificial dentures where all the teeth have been lost and much absorption of the gums has taken place is the constant tendency for them to slip forward. To over come this difficulty a Scotch dentist has developed a method of fixing dentures by means of two or more gold pins attached to the under surface, which enter holes either made by drilling the jaw bone or left after the extraction of a tooth. In other words, when necessary an artificial tooth can be riveted to the jawbone. This method of treatment has been adopted with great success.

Rodents !

THE

ODONTOGRAPHIC JOURNAL,

CONDUCTED BY J. EDW. LINE, D. D. S.,
39 STATE STREET, ROCHESTER, N. Y.
OCTOBER 15TH, 1891.

CHANGE IN EDITORSHIP.

Beginning with the January issue of the *Dental Advertiser*, Dr. W. C. Barrett will assume complete editorial control. Under his able management this well known periodical will be given a fresh start, and in brief time made to approximate in value and importance the *Independent Practitioner* of a few years ago. Dr. Theo. Lewis retires from the position he has so well filled these many years, that he may devote his time and energies to the further development of the Buffalo Dental Supply Company.

"DOC."

There is but one possible conclusion in regard to the man who presumes to address you as "Doc": His early training was that of a stable boy, or later in life he traveled with a stud horse. In either case he carries the odor of the barnyard with him and vents it in his speech. And yet, now that we think of it, we have heard the word used "in the old familiar way" at meetings, not medical alone, but dental.

MANUFACTURING COMPANY OF DENTISTS.

For many years a goodly number of the profession have whished for a company of practical dentists, and dentists only, to engage in the manufacture of the thousand and one things in daily demand in our busy practice. Many schemes have been proposed but up to the present have lacked the element of "go." Now, however, the E. Parmly Brown's Company comes to the front with a "provisional prospectus" that ought to give those who would do their own building the long-wished for opportunity to invest their spare cash with a prospect of immediate and perennial returns.

"The plan," says the circular, "as far as perfected, is to organize a Stock Company, capitalized at $1,000,000, and to have dentists subscribe for a block or blocks of $500.00 worth of stock at par, paying $25.00 every six months for ten years, the stock being delivered as paid for; and all that is not sold being kept as treasury stock, owned by the Company. Each suscriber is to have the privilege of a credit at any time to the full amount of his paid up stock, which stock stands as security for the debt, as it is transferable only on the books of the Company. Thus a subscriber may withdraw at any time; but interest at six per cent. will be charged on such capital as is not paid in as agreed, and also on the debt after sixty days, unless the stock be delivered back for the debt. As an additional inducement, each subscriber will have a credit of ten per cent. of his yearly purchases booked to his account at the end of each year, and will receive at the start a sample line of our specialties amounting to $10.00. Special discounts will be made to those who prefer to pay at the start for a whole $500.00 block, or for more than one block, or even for a larger portion of a block than $25.00; the discount on any amount to be in the following proportions: $45.00 for $50.00 worth of stock and $15.00 in specialties; $400.00 for a $500.00 block of stock and $25.00 in specialties."

"CLEAN," "CLEANED," "CLEANING."

These, it strikes us, are terms that should be banished from the dental vocabulary. If not first used as professional terms they were adopted from some questionable source to designate the operation of removing from the teeth salivary deposits, stains, etc. They should be thrown out because they suggest "dirt," and that form of "matter out of place" should be thoroughly disposed of before application is made to the dentist to have the teeth "treated." The words suggest a stomach-turning operation and put the man who does it on a level with the bucket washers of local boards of health. The dentist's work begins, or should begin for another, where the patient's skill with pick, silk and brush gives out. In short, the patient should "clean" himself—his teeth as well as his other anatomical possessions; while the dentist should "treat" the teeth and contiguous parts, using appliances that in the hands of the patient would make mischief, and with them removing concretions, stains, etc., an operation that properly comes within his province as a professional man. How rank the terms "clean," "cleaned," "cleaning," etc., are, may be seen at a glance: A patient calls with—"Doctor, I'd like to have my teeth 'cleaned,'" or, "When can you 'clean' my teeth?"

or, "What is your fee for 'cleaning' teeth?" Every one in dentistry has heard this so often, using the term as often himself perhaps, that it occasions not the slightest remark. But suppose the patient should go to the aurist with—"Doctor, I'd like to have my ears 'cleaned,'" or to one whose specialty is the nasal passages, with "Doctor, when can you 'clean' my nose," what would be thought of it—what done by the parties applied to? If dentists themselves were not to blame, the matter could be easily disposed of; but we have "cleaned" people so often, and advised "cleaning" at our hands so frequently, that the patient is not to be held accountable for the use in this connection of so beastly a term. Let us drop it as a violent case of—"Out, dammed spot."

ERRATA.

When it comes to erratification, in which even some of the "staid" monthlies are indulging, the Odontographic for July takes the lead. "Rosa Kautschuk," Scotch for "whether or no," the "indignant" poor, singulars, plurals, etc., etc., are so thoroughly commingled that nothing short of a second edition could possibly weed them out, and as this is expensive we must "let 'er go." The only safe plan for the would-be editor to follow is to lock up both manuscript and type till his vacation is a thing of the past.

OUR CONTENTS.

Microcidine, another of the neverending list of antiseptics, is a late candidate for favor.

The effects of heat on sublimate solutions is not common knowledge. Warm 'em everytime.

Look at your teeth, then at yourself, and determine, if you can what relationship they bear to each other.

The *Scientific American* quotes the *Demerara Argosy* giving a little of the natural history of *Ficus elastica* and allied species.

Disengaging the masseter muscle for the purpose of correcting constriction of the jaw, is an uncommon and yet perfectly legitimate operation.

As to the explosion of pastilles of chlorate of potash, the paragraph is a little obscure. It will be noted that the patient seated him "heavily," "upon a hard seat."

The eruption of teeth at advanced age is no longer a novelty. They belong, of course, to the "third set." It is to be remarked, however, that the patient was "gouty."

Aristol still holds its place, a prominent one, among antiseptics. Nothing better on the subject has appeared, however, than Dr. Kirk's paper before the New York society.

Lining decidious and permanent teeth with cement preparatory to filling, and art in crowning and bridging are briefly yet clearly treated. Death under chloroform, and Koch vs. Virchow, or science vs. politics completes the list.

According to the report of the National Association of dental examiners there were about 3500 students in american dental colleges last winter, 35 to 40 per cent. of these graduating. These and other facts make the report valuable as food for thought.

Last, but by no means least, is our Paris letter enumerating many things of interest rarely mentioned in American dental journals. Our correspondent has dipped into the law, likewise the gospel, and picked up incidents that have no place in office practice.

Every one about to enter upon the study of dentistry should fully inform himself before taking the step. The way of the transgressor is hard, and the would-be dentist will have to work like a boy killing snakes to keep up with, to say nothing of getting a place in, the procession.

Don't wait to do something great, but heed the advice of Dr. Beers and do something little now. The preparation of a few articles on minor subjects for your favorite journal will afford you the much needed practice for the presentation of those great things that you long since promised yourself you would do later.

Dr. Kirk's latest formula for "a paste for devitalizing the tooth-pulp" is simple and efficient, and of especial value because of the confort attending or following its application in acute pulpitis. This rivals Prof. Truman's famous formula, carbolic acid, arsenious acid and iodoform, and is less offensive to the sense of smell.

The American association meeting at Saratoga is everywhere and by everybody spoken of as one of the most satisfactory held in years. It seems to be feeling its legs again, and if but half the suggestions made by President Harlan in his able address are acted upon, the association will be in splendid shape for the work of 1893.

Cornil's outrageous procedure in grafting cancerous tissue into normal parts of another, albeit a cancerous, patient is justly condemned. Experiments should prove something, at least prospectively. More than that, a patient's rights are not necessarily lost under anæsthetics administered and scalpels wielded even by great continental surgeons.

To members of our profession eyes are eyes, and it behooves us to look to their health and our general confort and convenience. In the discussion of Dr. Dixon's paper there is much of interest and value, not the least of which is that part dealing with magnifiers. Some dentists use them constantly and with most satisfactory results. They are aids worth trying.

The use of arsenic and mercury by undertakers is a questionable procedure from a medico-legal standpoint, the often demonstrated post-morten diffusion of the former making it impossible to determine in doubtful cases whether the drug had been administered for criminal purposes or merely for embalming. Prof. Long's paper makes good general reading.

"The scientific versus practical" receives timely consideration at the hands of the editor of the *Dental Cosmos.* They are not antagonistic, as one might suppose on hearing and reading some men, but very closely related; and no matter how far apart at the start, they must join hands before their mission is fulfilled. The old question will up: "Of what use?"

"Nervous prostration," is a term glibly handled, but of the meaning of which little is known even by a majority of those who should be at least fairly well informed. Prof. Vaughan's contribution to our knowledge of fatigue, exhaustion and non-elimination is timely, and should be read with the care that the subject merits and as treated by so distinguished a man.

The article on gas cylinders brings to mind the work of the Johnston Brothers in placing compressed nitrous oxide in the dentist's operating room, displacing the crude and expensive materials, apparatus and methods of the laboratory. Ammonium nitrate, retorts, barrels of water, and not infrequently, a pair of trousers, likewise boots, are no longer reckoned as weekly loss, thanks to inventive genius and business enterprise. The article is reproduced from the *Scientific American Supplement.*

Venders of obtunding nostrums are as busy as a bull's tail in fly time, and their product in many cases is as destructive to the tooth-pulp as ratsbane itself. Secret preparations are well enough in the laboratory, but when used in the human mouth it is well that the user should know something of their composition. Obtunding formulas are to common too palliate the use, or even excuse the purchase, of a single nostrum now in the market. Dr. Palmer's tests simply add to what was well said months before by the late Dr. White in an editorial in the *Dental Cosmos*.

THE UNION MEETINGS THIS MONTH.

Dr. Butler, of Buffalo, chairman of the business committee, has issued the following:

The Fifth, Sixth, Seventh and Eighth District Dental Societies, of the State of New York, will hold their Sixth Annual Joint Convention at the Iroquois Hotel, Buffalo, Oct. 27th, 28th, and 29th.

These meetings are among the largest and best held in this country and this one promises to surpass all others in interest and attractiveness. Prominent men from this, adjoining states, and Canada, have already signified their intention to be present. An unusually interesting programme of essays and clinics is being prepared, and a cordial invitation is extended to all dentists to attend the meeting.

Special rates upon railways will be secured, and all arrangements for the comfort and convenience of those attending will be made.

OUR PARIS LETTER.

OUR CORRESPONDENT DISCUSSES LEGISLATURE IN FRANCE AGAINST FOREIGNERS—THE ECOLE DENTAIRES—LEAGUE FOR THE DEFENSE OF PROFESSIONAL LIBERTY IN THE ART OF DENTISTRY—SMOKE—NOTES, ETC.

PARIS, SEPT. 20, 1891.

The health resorts in France are truly remarkable. "With us," ecstatically but insistently affirms the mayor of a certain locality, "*we have never had a single microbe!*" Nevertheless, the summer boarders have torn themselves away. They were needed in Paris to help sing, whistle, jingle piano keys, and otherwise swell the popular chorus in "God Save the Queen," and the "Russian National

Hymn;" also to discuss the Franco-Russian alliance and the military manœuvers in the east (not the Orient); moreover to wear Cronstadt millinery and haberdashery, use Cronstadt stationery and eat delicious Cronstadt ices. "Tout à la Russe!" at the moment. A leading newspaper declares this a thousand times preferable to "Tout à la Chicago!" and complains that Sara Bernhardt came home "with the air of a Yankee just returned from a journey in search of dollars!" (Always an exclamation point—that's French.)

* * *

Our poor little sister republic is jealous of Americans. This feeling has been hard to conceal in the hot discussion over the new statute regulating the practice of medicine, which passed the Chamber of Deputies in March, and only awaits confirmation by the Senate. It includes provisions very important to dentists. The special committee sent by the *Association Générale*, to look after the interests of the profession, did not succeed in getting a hearing, and the bill was passed unexpectedly soon, after a short discussion in which Dr. Isambard, deputy from Eure, raised the only protesting voice.

* * *

A general assembly *extraordinaire* of the *Association Générale*, was convened in a hurry, to see what was to be done. The extremists, or as they call themselves, *statu quo-ists*, were greatly excited, and protest loudly against any legislation whatever interfering with perfect "liberty" in the practice of dentistry, claiming that any interference on the part of the government is a backward step in the progress of civilization, of more than a hundred years !

Many members expressed themselves as of this opinion, but the more conservative of them thought it the wisest course to try to secure some modification by the Senate of the language of the obnoxious articles, rather than to risk losing all by asking too much. This was the feeling of the majority, and after some lively discussion, it was decided to petition for the following alterations, as the best that could now be made of the situation:

Article 5.—"The practice of the art of dentistry is interdicted to every person not provided with a diploma of doctor of medicine, of health officer, or with a dentist's license, conferred by the French government after examination undergone before a State institution of higher medical instruction, and in conformity with a course of study determined upon in Superior Council of public instruction." Voted to ask the substitution of the word "diploma" for "license," and insertion of the word "surgeon" before "dentist;" also the addition of this paragraph: "Upon submitting examples of work proving the nature of their previous studies and the date of their establishment, dentists aged more than thirty years, having practiced in France five years before the promulgation of the present law, can obtain the new diploma of surgeon dentist, mentioned in article 5, by undergoing before a jury of the State a practical examination and an examination in anesthesia. Graduates from the two schools will only have to submit to the examination in anesthesia."

Article 6.—"The right to practice the profession of dentistry is, by transitory disposition, maintained to every dentist proving, *by exhibiting his license, a year's practice* at the day of the promulgation of the present law.

This sufferance gives, in no case, to dentists included in the conditions of the preceding paragraph, the right to practice anesthesia."

Substitution is asked for the words italicized, of the following: "*by authentic examples of his work, that he was practicing.*" Also the insertion in the second paragraph of the word "general" before anesthesia. These are the principal amendments to be petitioned for.

* * *

Article 10 provides that:—"From date of promulgation of the present law, dentists or midwives from foreign countries, whatever their nationality, cannot practice their profession in France or her colonies, unless they obtain, the former the special diploma prescribed in Article 5, the latter, the diploma required in Article 7."

The following amendment was offered by Dr. David, of the *Ecole Dentaire*:

"Permits may be accorded by the minister, comformably to a course decided upon by the Superior Council of public instruction; in any case, they can have but three trials."

Dr. David was reproached with attempting to favor foreigners, and so much feeling was manifested that he afterward came out in a published letter, insisting that this was exactly the reverse of his intention.

Article 18.—"The functions of medical and surgical experts before the tribunals can only be fulfilled by French or naturalized physicians and surgeons."

The commission will ask the insertion of "surgeon dentists."

* * *

The discussion in the Chamber of Deputies before the vote was racy. The *Commissaire* electrified the whole body by such allegations as this: "There is scarcely a dentist any more, I will not speak of the smaller villages, but in the towns of from 5,000 to 10,000 inhabitants, *who does not chloroform or use cocaine* AS WELL AS ARSENIC IN FILLING TEETH ; *who does not, in a word, deal with substances which may produce death.*"

(The italics and capitals indicate the emphasis called for by this frightful suggestion.)

The attempt was made to include a provision that no dentist could in future practice either general or local anesthesia without the assistance of a physician, nor prescribe any medicaments except by orders given upon advice from the Academy of Medicine. This, being a little too strong, did not get through.

* * *

As might be expected, the situation furnished the subjects of the addresses at the annual banquet of the *Association Générale* held in April, this year made to celebrate what was called the "golden wedding" of M. Emanuel Lecaudey, he having been in full practice fifty years, and in turn Director or President of too many things dental to enumerate here. There was a very creditable display of eloquence on both sides of the question. It is evident that French dentists are very much in earnest, very enthusiastic as to the future of the profession in France, very proud of their *Ecole Dentaire*, justly proud of what they have accomplished in the last eleven years. The effect of the absolute liberty conferred by the much talked of decree of 1791 was the introduction into the ranks of self-called dentists, of enough ignorant artisans of various trades, to throw the profession into discredit; above these were the dentists who were merely clever mechanics, with no scientific knowledge; still above these a few physicians who took up dentistry for various reasons, ignorant. however, of the mechanical technique. Only the simplest and most timid operations were attempted, and this was the situation when, as they say here, France was "invaded by foreigners," graduates of dental colleges. The native dentists were first paralyzed with astonishment, then broken-hearted at the spectacle of an unpatriotic public flocking to "give their confidence to foreigners." What wrought the magic spell? Merely a diploma. The native Parisian dentist sat down to think, and he thought a long time. It took him a long time to realize that anything French could be inferior. Then he suddenly got up and founded the *Ecole Dentaire*, established and supported by voluntary contribution, largely from the leading dentists and many physicians of France, with some help from foreign dentists as well. To-day it is claimed that the work and influence of this school have "put a check upon competition by foreigners (especially Americans), and transformed the *importation* to *exportation*."

* * *

Dr. Thomas told a little story at the banquet. Once upon a time there was an influential man in Austria, decorated with several orders, doctor of several universities, surgeon of the arms of his Apostolic Majesty, dentist to the emperor and imperial family. He persuaded the powerful minister of that period, M. de Mettenich, that in order to make a good filling or extract a tooth in an orthodox manner, it was quite necessary that the practitioner should have precise ideas of the anatomy of the inferior members, and that he should have had at least some practice in applied obstetrics. From that time on, those who wished to practice dentistry were required to take a degree in surgery, such as was obtained in a kind of secondary schools of medicine. Next these schools were abolished, this degree suppressed, together with all other inferior medical grades. Finally the practice of dentistry was prohibited except to regular medical graduates of a rigorous university course. Dr. Thomas averred that the instruction given in the university of Vienna is the best in the world for medical specialties, with the most method and rapidity; but says he has yet to hear of any one going there to study dentistry. From which he infers a very bad state of things in Austria, from the dental point of view.

* * *

M. Lowenthal, D. E. D. P., publicly accuses the physicians who practice dentistry, with energetically opposing the statute in their own interest, because while barbers, butchers and carters are free to practice dentistry, it throws discredit on the profession, and thus the physician dentists, haughtily looking down upon their wretched confreres, take in the tide of patients flowing to their doors and demanding protection from the sanguinary manœuvers of the dentists without titles. Further, "liberty in dentistry is no more for the public good than liberty to the pickpocket and poisoner." As to those who are unable to earn a diploma, he makes the sensible suggestion that "agriculture lacks men."

To him M. Roy, D. E. D. P., Secretary General of the *League for the Defense of Professional Liberty in the Art of Dentistry*, responds with alacrity, and asks: "What physician dentists?" Magitot? No. Galippe? No. David? Again no, and so on. "Hurrah, dentists, pickpockets, poisoners, give us the hand ! It is a dentist who says it !"

* * *

The *League*, of which M. Roy is Secretary General, is composed of the very lively minority of *statu quo-ists*, few but fiery, headed by M. Godon, Vice-President and Association Director of the *Ecole Dentaire*, and one of its most active founders. The majority feel that the restrictions imposed by legislation, if amended as they ask, will greatly raise the standing of French dentists professionally and socially.

The *League*, and the *Association Générale*, will present separate and distinct memorials to the Senate.

* * *

Count Tolstoi having written a treatise in which tobacco is arraigned as the cause of many crimes, his translator, M. Halpenine, has written to ask a number of savants and writers: "Do you smoke ?—and if you smoke, what do you think of tobacco ?" Also the more delicate question, "Do you drink ?" Most of the responses were like this: "I don't smoke, I don't drink. Why ?" A Paris editor comments: "The public imagines that men of letters, painters and journalists, pass their time in banqueting and draining goblets. It would be well to reflect that sobriety is not only a virtue but a necessity to such workers, with nerves on the strain and brain congested. The machine overheated by alcohol or tobacco, shivers to fragments!"

Can I crowd in a French joke or two ?

"New course in history apropos of the Russian craze—College professor : In 1812 Moscow was burned. That disaster, wrongly attributed to Rostopchin was caused by imprudence. The Russians wished to illuminate on account of the arrival of the French.—"

"Supject of composition to be proposed by the Sorbonne—Prove that the destruction of Herculaneum and death of Pliny were due to a convulsion of Vesuvius, which smoked too much."

"Surgeon: 'Courage ! I shall put you to sleep. I must cut off your right leg.'

Patient: 'O doctor, I beg ! Do not take advantage of my slumber to cut off the left leg !'"

Here is one in which I have tried to preserve the native idiom:

"Street arab to young practitioner in Paris hospital ward about to make an extraction:

'I hope thou art not going to mangle me with thy tool, hey, and that thou art going to do this for me properly?'

Operator kicks. 'For what dost thou take me, thou abortion? Just open.... thy.... mouth!'

Patient opens a mouth like the Augean stables, pointing out the tooth with his finger and insisting: 'Whatever thou doest, break it not! Look out!'

Operator grasps tooth firmly with forceps, and off comes the crown. Fury of the arab!

Operator, not at all disconcerted: 'What? You wished then that I take out the whole at once? It was necessary to say so beforehand, then!'

The arab was silenced. He is it yet."

"E'er he stepped upon the deck,
He threw about her little neck
A ribbon blue and yellow,
And on it hung a double tooth;
A simple token 'twas, in sooth—
'Twas all he had poor fellow!"

AMERICAN MICROSCOPICAL SOCIETY.

The American Society of Microscopists, at its annual meeting held at Washington, August of this year, took the old time kink out of its name, adopting that of our heading as more appropriate and much more easily spoken. Addresses were delivered by Dr. Billings, of the Surgeon-General's office, Dr. Taylor, of the Department of Agriculture, and Dr. James, President of the society. Twenty-eight papers were read, fifty-two members added to the roll, the society incorporated, the question of establishing a journal discussed, and officers elected for the ensuing year.

Prof. Gage, of Cornell University, was designated Chairman of the working session of the meeting to be held during the Columbian Exposition in '93.

Keep the subscription list away from dental society meetings. It is sure death to any society that persists in fooling with it.

PELLETS.

The translations in our July issue, by-the-awy, have brought us many letters of comment and approval, and for some time to come this feature will occupy a prominent place in our quartertrly issues.

The statement that his obtundent does not contain anything of a poisonous nature may be true, and it may be quite as true also that the vender is incapable of distinguishing an everyday poison from roadside pigweed.

"Got er tooth ache, Mary?"
"Yep."
"Have you got er cavity in it?"
"Nop. I got cotton in it."

The Central Dental Association of Northern New Jersey will meet Monday evening, the 19th, at Newark, when Dr. Allen Osmun will offer "A suggestion for lower dentistry." The dinner is announced for "6:30 sharp."

E. M. Dickerson, the eminent patent lawyer, is said to possess the finest amateur outfit in the United States. His lenses alone are valued at $3,000. He is probably the only amateur who has undertaken 20x24 pictures.—*Photographic Times.*

Learner & Teacher, a monthly paper having New York for its place of publication, keeps one in touch with general educational matters at small cost of time and cash. The latest and best in its most condensed form is herein made to meet the necessities of the busiest-of-men who read.

Prof. Sedgwick's contribution to the report for 1879, of the Massachusetts State Board of Health, includes a number of photo-micrographs of micro-organisms, etc., the work or Dr. Andrews, of Cambridge. His success in this most difficult field is the natural outcome of patience and skill, and as a photo-micrographer his reputation has far exceeded the limits imposed by dentistry.

This man must have been at a dental college commencement:

"Some had robes sweeping the floor; some, those that were half way up to their knees. Some had black pants and some, white; and there were all shades between. Some held up their gowns as a woman does her dress, and some, as they climbed to the stage, stepped on their's, and some stumbled. *O Tempora! O Mores!*

Some one has favored us with a copy of the *Detroit Evening News*, of August 17th, the first page of which has a full column boldly head-lined thus: "He has sued the dean," "Dr. C. H. Land after Dr. Jonathan Taft, of Ann Arbor." "He claims he has been slandered," "The trouble said to be caused by Taft's insinuating that Land was a quack to his University classes."

Dr. Land thinks $50,000 will compensate him for what he characterizes as "slander." Dr. Taft hasn't named his figures, but with the help of a jury, will probably make it a dollar or two less.

As an "ad" the column in question would cost a snug little sum, but as news it can be made to answer the same purpose minus the expense.

Dr. Richard J. Dunglison, treasurer, has issued a circular letter to the effect that Membership in the American Medical Association is obtainable, at any time, by a member of any state or local medical society which is entitled to send delegates to the association. All that is necessary is for the applicant to write to the Treasurer of the association, Dr. Richard J. Dunglison, lock box 1274, Philadelphia, Pa., sending him a certificate or statement that he is in good standing in his own society, signed by the president and secretary of said society, with five dollars for annual dues. Attendance as a delegate at an annual meeting of the association is not necessary in order to obtain membership. On the receipt of the above amount the weekly Journal of the Association will be forwarded regularly.

A magnificent Microscope has just been completed by the Munich Poeller Physical and Optical Institute for the great Chicago Exposition at a cost of $8,750. It posesses a magnifying power of 11,000 diameters. As might be expected, electricity plays an important part in the working of this gigantic instrument, which, after inspection by American citizens, is expected to give an impetus to the Munich mart for scientific apparatus. The electricity furnishes and regulates the source of light, which, placed in the focus of a parabolic aluminium reflector, reaches an intensity of 11,000 candle power. The electricity also provides the means of an ingenious automatic mechanism for the centering of the quadruple condensers and illuminating the lenses. There is an arrangement for the exact control of the distance of the carbon point. The most important novel feature is the cooling machine, which is indispensable on account of the extreme heat, 1–43 calories per second, generated by the intense illuminating arrangement. A machine regulated by a Helmhotz electric centrifugal regulator provides the several microscopic and polariscopic systems of the apparatus with a fine spray of fluid carbonic acid, which immediately after its release from the copper vessel, in which it is held under a pressure of 23 atmospheres, becomes converted into gaseous matter, so intensely cold that only .00007 gramme of carbonic acid per second is required to give the result. The magnifying power of the apparatus with ordinary objectives, as has been stated is about 11,000 diameters, but with the oil immersion it can be increased to 16,000.—*Photographic Times.*

BOOKS, PAMPHLETS, ETC.

COMPARATIVE DENTAL ANATOMY, by Dr. W. C. Barrett. Reprinted from the *Dental Cosmos*. Pp. 22.

THE DENTAL AND SURGICAL MICROCOSM, a quarterly, edited by Dr. S. J. Hayes, Pittsburg, Pa. It goes on our list of exchanges of course.

THE HOMŒOPATHIC NEWS, a monthly, edited by Dr. R. G. A. Meier, and published by the Luyties Company, St. Louis, Mo.

THE APOTHECARY, a quarterly, edited by Dr. Oscar Oldberg, and published by the Illinois College of Pharmacy, Chicago.

HUMAN PHYSIOLOGY. By Albert P. Brubaker, A. M., M. D. Sixth edition. Philadelphia: P. Blakiston, Son & Co. Pp. 198.

Another of the ever popular quiz-compends, revised and improved, with new illustrations and a table of physiological constants. A little book that assists materially in the reading and study of larger works on the same subject.

3000 QUESTIONS ON MEDICAL SUBJECTS. Same publishers. Pp. 144.

This little book is the work of a medical man, teacher and writer of experience, and is designed to meet the requirements of the student who wants to know, in fact must know, to get through creditably. Anyone who thinks himself fairly well informed need go but a little way in these questions to find himself a victim of misplaced confidence. No answers are given, but instead references to standard works. It ought to prove useful as a reference index.

THE

Odontographic Journal.

VOLUME XII.—*January, 1892.—No. 4.*

THE STERILIZATION OF INSTRUMENTS.

We have excluded chemicals, and also dry heat, and the next question is the employment of moist heat. Of course, you undertand that there are certain things that we may require to sterilize that will stand moist heat, and certain other things that will stand dry heat better than moist; but if the moist heat can be used, it is the quickest and most effective means for accomplishing sterilization of which we have any knowledge. Moist heat may be applied in two ways: by boiling, that is, by placing the instrument in a water-bath heated to the boiling-point, or by the use of what is called the steam sterilizer, by the use of which the moist steam, passing over the instruments, accomplishes the sterilization; this latter method is quicker and more effectual than the ordinary boiling, and is also applicable to a wide range of instruments. The common apparatus for applying moist heat, when of steam and not of boiling water, consists simply in a receptacle which holds the water, with a grating over it, upon which the instruments are placed, and a vessel running up and around the instruments, forming a retaining-wall for the steam, having a loosely-fitting cover to put the steam under slight pressure. The very best apparatus for the application of steam heat that I know of is the Arnold steam sterilizer. I know it is not usual to mention the name of any particular manufacturer at a meeting of this kind, but this apparatus has decided advantages over any others, and it cannot be spoken of without using the name; its perfections have been recognized not only here but in Europe, where it is now being copied, the manufacturers having stolen the model without giving credit to the inventor. It consists, roughly speaking, of a reservoir that comes immediately over the flame, into which is put on only a thin layer of water. When the water has been turned into steam, it passes up into the chamber and over the instruments, then through the holes in the loosely-fitting cover, where it is retained by the outer hood or jacket, and, becoming condensed, drips down the sides again into the reservoir next to the flame, where it is again converted into steam. It does not allow any steam to escape into the room, and so could be placed wherever most convenient. I have had one of them in my labratory heated to nearly 110° C. without anybody realizing that there was any steam on at all, and by its use the destruction of the most virulent organisms that you could place upon your instruments can be thoroughly completed in about twenty minutes after the steam has begun to pass. The objections that have been raised against steam sterilizing are, that it rusts the instrument, and that there is a possibility of injuring the temper of some of the more delicate. As far as the injury to temper is concerned, I have not seen it occur in my experience, and I believe there is no ground for such objection. With regard to the injury to the polish or rusting of the instruments, unless they are taken out and allowed to cool before drying, there will be little trouble of this kind. It is the quick cooling, and not the application of the steam, that injures the polish of the instrument, and if they are dried quickly after being removed, little danger need be feared from that source. I have thought over the thing a good deal, and considered carefully what I should recommend to you to-night, and I concluded that it would be impossible for me to tell you of any better method for sterilizing your instruments than to use one of the small-sized Arnold steam sterilizers set over a Bunsen burner, in which your instruments can be placed, either in glass jars or in wire baskets. The glass jars seem to me to be more desirable, and for this purpose the ordinary marmalade jars that we get from the grocer could be utilized, placing a little cotton wool in the necks after you had put in your instruments. After heating, the instruments could be easily removed and thoroughly wiped, and the sterilization be completed quicker and with less possibility of injury to the instruments than by any other method I know of.—*Ernst* (Prof. H.C.).

Dr. Potter.—This is a subject about which I have given considerable thought from the very first of my professional work. It has, however, always been somewhat perplexing, even though consulting the current authorities, to be quite sure as to what processes or chemicals had a true germicidal action. And I am particularly pleased to-night in getting so much reliable information direct from the laboratory. For it is upon laboratory experiments that we must rely if we want to know with certainty as to the value of germicides. As to Dr. Ernst's methods, I have in a way practised them for some time. I should like to ask him a few questions. In the first place, what is the temperature of the Arnold sterilizer? If the steam is to any extent kept confined, the heat must rise above 100° C. Secondly, after the steam is up, how long a time must instruments be submitted to its action in order to be thoroughly sterilized? Thirdly, would the addition of a potassium solution to the water control to any extent the matter of rust? We know very well that in boiling instruments the addition of liquor potassa prevents their rusting, and my query is, would the same substance have any influence in an Arnold sterilizer?

My own practice has been in the care of instruments to boil such of them as could not be injured by boiling, and to submit others, as chisels and excavators, to a ninety-five per cent. solution of carbolic acid. Acid of this strength does not rust instruments as do the weaker solutions. The Bunsen burner I have used extensively on certain instruments which could be exposed to its flame without material injury. How to sterilize a mouth mirror is still an unsolved problem to me.

Dr. Taft.—I should like to ask if a thorough cleansing of all instruments with soap and water with a good brush will not accomplish sterilization?

Dr. Niles.—I am very much impressed with the necessity of sterilizing our instruments. The difficulty seems to be to get at it conveniently as we are engaged in going from one patient to another. Of course, we may have two sets of instruments, and while operating upon one patient, our assistant can sterilize the instruments that we have used in the preceding case. But it is necessary that this should be done, quickly and conveniently near the chair, and the process continually going on. I have thought of getting an oven. An idea has occurred to me to-night that possibly we might simplify the matter by using hot oil, or carbonized oil, or carbolized glycerin. We can attain a higher temperature in these mediums, and the instrument simply dipped for a few moments in a very small vessel, which might be arranged near the chair over a Bunsen lamp, it seems to me would accomplish what is desired. The idea, as I understand it, is to get a sufficiently high temperature to destroy germinal life. Water might boil away; if hot oil be used, we would avoid rusting the instruments.

Dr. Giblin.—Is it necessary that there be a lesion—an abrasion of the mucous membrane—in order that bacilli become dangerous in the mouth?

Dr. Werner.—To me the mouth-mirror is the instrument *par excellence* accountable for carrying infection from mouth to mouth. Many a dentist will wash his excavators, his chisels, and minor instruments, but the mouth-miaror will be most neglected. What shall we do with it? Will the essayist instruct us as to the germicidal properties of creolin?

Dr. Stoddard.—I would like to ask Dr. Ernst if electricity has been used in sterilizing instruments, and if so, how powerful a current is necessary?

Dr. Potter.—If alcohol is good for anything as a sterilizer, I have here a mirror which has been for many hours submerged in it without doing any damage.

Dr. Werner.—We must not forget our napkins, which may be a great source for conveying disease from one mouth to another. Dental napkins are a great source of annoyance to many cleanly patients, and I presume washing is not a very efficacious way of sterilizing them.

Dr. Taft.—If the system is in a condition of perfect health, are not the bacilli of tuberculosis, syphilis, septicæmia, and various other infectious diseases, rendered inoperative? It is well known that we are full of bacteria of one kind or another, and when the system is in a condition of perfect health, we are not aware of their existence to any alarming degree, but the moment the vitality becomes lowered, these bacteria become effective and work injury. Otherwise, why is it not fair to presume that our patients are being constantly inoculated with the various forms of bacilli?

Dr. Ernst.—Mr. President, I will, as far as I can, answer the questions in the order in which they have been asked.

Dr. Potter asks about the temperature and the length of time which the Arnold sterilizer should be used, and the effectiveness of a solution of potash for preventing the rust. The temperature obtained is about 101° to 103° C., the steam being slightly under pressure. That pressure is increased if the heat is increased and the steam given off more rapidly, but that is quite enough. The time for exposure for complete sterilization need not and does not extend over fifteen minutes after the steam has begun to pass; twenty minutes gives us an ample margin. The effectiveness of a potash solution is unquestionably very great, and there is no reason why it would not work just as well in the Arnold sterilizer as in any of the ordinary forms of steam-bath.

Of course, in what I have said to the Society this evening I have generalized, because I have realized that the means must vary according to the circumstances, and on account of the difference in circumstances, no definite lines of procedure can be laid down.

Dr. Potter also spoke of carbolic acid, and, as he says, it is very effective if used in sufficient strength and for a sufficient length of time, having only the disadvantage that other chemicals may have,—the smell,—which renders it objectionable to most patients, and particularly if used in the strength of which Dr. Potter speaks.

The use of the naked flame of the Bunsen burner is as effective as anything can be, provided the instrument can stand it, but there are very few that I know of that can stand a Bunsen flame for a sufficient length of time to complete the sterilization. It would be necessary to heat the instrument almost to a red heat every time, and that, of course, if repeated often, will spoil the temper of any instrument.

Alcohol is not a germicide, it is an antiseptic only. That can be proven by the immersion of small pieces of tubercle in alcohol. While in the alcohol the bacteria remain inactive, but on removing them and washing with water, they resume their inactivity. The use of alcohol as I have employed it myself in cleansing instruments—such instruments, for instance, as syringes which have been used for injections—is entirely for washing away traces of carbolic acid,—not at all as a germicide.

Dr. Taft asks why soap and water are not sufficient. It is sufficient for cleaning away dirt, but it is not sufficient for the destruction of bacteria,—they are simply diluted, but not destroyed, and wiping does not remove them with certainty. The same objection is to be brought against cloth, which will polish the instruments more or less, but does not clean the small corners, and any minute particle that may be present there might be sufficient to cause a great deal of harm. The portion that is necessary for the production of pathological change is inconceivably small, and may readily lurk in the corners of the burs of the dental-engine, and require the aid of the lens to see them. The rubber is simply good for polishing, and, like the soap and water, and the cloth, does not remove the bacteria from the interstices of the instrument.

The objection to carbolized oil or glycerin in my experience is that it very soon fills a room with such fumes that it is impossible to live in it. I have attempted to use it in my laboratory, which is a room larger than this one, and found that I would have to open all the windows or go out myself. The effectiveness of sterilization is very perfect. Dr. Niles also spoke of the evaporation of the water. In the Arnold sterilizer the water does not evaporate, so that you can use it all day long without renewing the water. The apparatus is easy of manipulation, and is quite small, so that it can be conveniently employed for your purposes.

The question was asked whether an abrasion was necessary for the inocculation by the various bacilli. It is true that an abrasion of the mucous membrane is necessary for the local infection of the patient, but the presence of the rubber dam does not by any means prove that all of the infectious material is excluded from the mouth.

The mouth-mirror seems to me to be an offender, from my own experience. I have suspected, what has been said this evening, that it was not cleaned quite as thoroughly as it should be. One suggestion that I would make is that the handles of the mirrors should be made of a solid piece of steel. The added weight would not count for much, and the ease of taking care of the instrnment would more than counterbalance it. They could be sterilized either in the sterilizer or in carbolic acid, but whether that would injure the silver on the glass I do not know. If that be true, it seems to me a matter of very slight mechanical ingenuity to return to the old style of metallic mirrors, and on a small scale I think they could be made quite as effective as the present form.

With regard to the effect of creolin as a germicide, I have not tested it scientifically, and do not know anything about it ; that sort of question is one where the dental specialist should come in and investigate for himself Some member of your society should come down to my laboratory and settle that question. These are special things, the details of which I cannot make myself personally familiar with, and one of my objects in doing the work that I have done was to have a laboratory which should be thoroughly equipped, and should be open to any one who will take the proper training for doing this special work.

Electricity has not, so far as I know, been used in the disinfection of instruments. Its influence upon the vitality of bacteria in culture has been tried, and is unsettled, and certainly slight. Therefore, I should not suppose it would be of any service for the sterilization of instruments.

The sterilization of napkins can be very easily accomplished in this same Arnold sterilizer. All that you need is to have a wire basket in which they can be placed loosely and left in the sterilizer for fifteen or twenty minutes. Then they can be washed without any danger to anybody and used over and over again.

The question of perfect health and of lowered vitality is an important one in the production of pathological changes in the human organism, but the change of vitality which makes a person susceptible, as transferring him from a condition of insusceptibility, is so extremely delicate that nobody can tell when that change occurs. We know that a perfectly healthy person may be stricken down instantly by almost any form of disease, and all that we can say is that this element of lowered vitality has come into play, but exactly how or when we cannot say.

Referring to the practicability of this question, I have endeavored to be as practical to you as I knew how. It was necessary to speak of the bases of the remarks and to explain them as well as possible. The practical part of it is distinctly what I am interested in as much as you are.

Dr. Reilly.—Before the subject is passed, I should like to ask Dr. Ernst if he can suggest anything for the use of the hands or nails which will render them sterile?

Dr. Ernst.—There is nothing that is absolutely certain to accomplish that except corrosive sublimate. To many skins that is like pouring kerosene on the kitchen fire,—it will instantly start up an irritation that is anything but pleasant; but if the skin will stand it, a solution, one to five thousand, used with soap and brush, and followed by pure water, is very effectual. If one's hands cannot stand that, then the best we can do is to clean out the corners of the nails with a fresh orange-wood toothpick, and wash the hands as thoroughly as possible in water.

Dr. Bigelow.—Dr. Ernst made a remark that corrosive sublimate could be used effectively on instruments; I would like to know what strength is best.

Dr. Ernst.—One to one thousand, and it would be a little unsafe to use upon instruments that are going right into the mouth. I have seen injurious effects from absorption when instruments were used so quickly after being immersed.

Dr. Stanley.—I understood Dr. Ernst to say that a steam-bath was rather more effective than boiling in water. I cannot see why it should be.

Dr. Ernst.—It has been found by experiments that the actual temperature of a water-bath varies from the bottom to the top of a vessel, and you might get thorough disinfection at the bottom next to the flame, and not at the top. In the steam sterilizer the steam comes up and around the instruments, and the temperature is kept up by the constantly-renewed stream of live steam, and this being kept under a slight pressure, the temperature is always the same.

Dr. Taft.—It is said that soap and water is not an effectual way of getting rid of the bacteria, and yet it seems to me that we can convey micro-organisms from one mouth to another by our hands as easily as in any other way. Now, if the hands are not subjected to a steam-bath, how are we sure that we get rid of every bacterium? For, as I understand it, one can work as much injury as a thousand. To be sure, we wash our hands and cleanse the finger-nails after every operation before going to another patient, but we do not subject them to a steam-bath nor immerse in germicidal solutions. How, then, do we know when we have gotten rid of all the germs, and when the hands and nails are surgically clean?

Dr. Ernst.—In the first place, the cleansing of the finger-nails should be done before the final washing of the hands, and the washing of the hands should be done under tap, so as to carry off everything possible. In the second place, one cannot say that you actually do get rid of all the bacteria, but that you are doing the best you can for the protection of yourselves and your patients.

Dr. Taft.—In view of that, how much real danger is there in this whole subject of inoculation?

Dr. Ernst.—That is difficult to say. That disease is produced by these organisms is unquestionably true. Personally, I believe that the slightest lesion of the skin may be all that is necessary for the entrance of the bacilli. I was convinced of this by an experiment where I inoculated myself accidentally in my own laboratory. In a short time I had an abcess larger than my hand, from which I made cultures and carried out a scientific experiment. Several medical gentlemen were acquainted with the case and saw the result. The danger may not be very great; that it does occur there is not the slightest question. Some time ago I discovered that a patient of mine, who was afflicted with syphilis and had syphilitic patches in the mucous membrane of the mouth, had gone to a dentist whom I knew did not take the best precautions with his instruments, and I kept the gentleman away from that dentist. I should use my influence with my patients to keep them from a dentist whom I knew neglected the care of his instruments, and would not consider that I was violating the rules of professional courtesy by so doing, but simply protecting my patients.

Dr. Taft.—Do I understand, then, that unless there is an abraded surface there is no danger of inoculation?

Dr. Ernst.—That is an extremely diffiult question to answer. The probabilities are that there is none. At the same time, even if that be true, we could not tell without the aid of the microscope that the entire surface of the mucous membrane is whole. There may be an abrasion sufficient for the entrance of the bacteria, which you saw on the screen, which could not be perceived by a mere inspection, so that even if a lesion be necessary, we cannot say that it is or is not present.

Dr. Giblin.—I would like to ask Dr. Ernst if there is a bacillus or bacterium which will cause tonsillitis? A relative of mine was afflicted with it, and while she was ill her little girl was taken down with acute tonsillitis. I thought possibly, by the use of a spoon or some table utensil, which would not be sterilized by the usual method of cleaning, it might have been transmitted.

Dr. Ernst.—You were undoubtedly correct in your conclusions. Tonsillitis is unquestionably due to bacterial action; but, like a number of other diseases, it is not a specific disease,—that is, not all the cases of tonsillitis are produced by the same organism.—*International Dental Journal.*

THE THERAPEUTIC VALUE OF A GOOD SHAKING.

An esteemed colleague on the other side of the water had been suffering for several weeks from a most obstinate attack of catarrhal jaundice, which resisted every form of medication that he or his friends could think of or found recommended in the text-books and therapeutic manuals. In the midst of his distress, and when he had about abandoned all hope of ever again eating a square meal with relish, or having a normally colored alvine evacuation, he found himself obliged to undertake a journey of some length by rail. He did not want to go, but duty called him, so he obeyed. Soon after arriving at his destination in the evening he had an attack of colic, which was succeeded by a sensation as if a syringeful of warm water had been discharged from the region of the gall-bladder into the stomach. The sensation was a novel one, and while pondering upon its significance he fell into a deep and dreamless slumber, from which he did not awaken until the following morning. Upon rising he found, to his joy, that he was hungry, and ate a good breakfast with better appetite than he had had for over five weeks. The meal was followed by a very satisfactory stool, in which was seen considerable quantity of bile. From that time his recovery was rapid. The cure was attributed to the dislodgement of a plug of mucus from the bile-duct in consequence of the shaking-up on the railroad, for it must be remembered that among the effete nations of Europe vestibule trains are not, and the rails are often laid in such a fashion as to cause the greatest possible jolting. But this discomfort was a blessing in disguise to our suffering *confrère*, and so pleased was he with the results that he urges all who may be afflicted as he was to take a railroad ride, or if unable to do that, to drive in a springless wagon over a corduroy road. To those who may be so situated that they can do neither he recommends a self-inflicted shaking by jumping up as high as possible and coming down on the heels. He has succeeded in curing two cases by this simple measure, and regards it as far more efficacious than the most complicated drug treatment. The school boy has long experienced the application of shaking as a remedy in the moral order, and now he will learn that it also relieves him of bile—pure, material, bitter bile. Thus the world moves, and the god of healing smiles approvingly upon the upward strivings of his devotees.—*Medical Record*

CHEMICAL ANTISEPSIS.

The question of chemical antisepsis, if we may judge from present indications, is suffering from an incubus due to too much guesswork and a lack of accurate, unprejudiced, experimental investigation.

Its close relation to the germ theory of disease has led to certain misunderstandings regarding its possibilities. The brilliant achievements of Pasteur and Koch in general, and of Miller in dental bacterial pathology, whose experiments have proved to demonstration the casual relation of certain microbes to specified diseases, have in many cases led to reasoning somewhat as follows: Given the fact that microbes cause disease, it follows that the destruction of the specific germ, in each instance, is the correct line of therapeusis and prophylaxis. This led to elaborate experimentation looking toward the discovery of substances having the power of destroying pathogenic germs, and so far as laboratory experiments were concerned, many chemical substances were found to possess the destructive property required. Of these, none have received greater commendation or more general acceptance than mercuric chloride. In general surgery, gynecology, and obstetric practice, the use of chemical antiseptics, with at first carbolic acid and then mercuric chloride as the favorite and typical agent, became general. The clinical record was soon found to be a disappointing one as compared with the record of cases where chemical antiseptics were not used, deaths, particularly in laparotomy cases, occurring which were directly traceable to the use of antiseptics ; and these were repeated with such frequency as to lead to the entire abandonment by leading surgeons of methods based upon the use of chemicals for the destruction of germs, and the substitution of prophylactic methods based upon conditions of absolute cleanliness.

It is of interest to note, in this connection, that the correction of the erroneous deduction, hastily made from laboratory experiments, as to the usefulness and safety of chemical antiseptics, has been made by the test of actual clinical use, and exemplifies the limitations of strictly laboratory investigation.

The more recent investigations are tending toward an elucidation of this failure upon the part of chemical antiseptics to fulfill earlier expectations, and two prominent factors, which at first were ignored or overlooked, are claiming attention, inasmuch as they constitute obstacles which, unless overcome, are likely to prove fatal to the general use of chemical antiseptics, at least in major surgical operations.

The greatest difficulty to be met is the high grade of vitality of certain pathogenic germs as compared with that of the tissue infected by them. This in the majority of cases being superior to that of the tissue, it is evident that the use of an agent sufficiently powerful to destroy the germs must also result in the death of the tissue elements; and what has been stated in this connection of the germs themselves is found to be true in a higher degree of their spores.

Another difficulty, and one closely related to the foregoing, is the quantitative relation between the antiseptic—and the term is here used to signify a chemical substance having germicidal properties—and the amount of septic matter to be destroyed. It will be easily seen that while the qualitative relation of an antiseptic may be germicidal when minute amounts of septic matter are under consideration, the use of such a substance becomes quite a different problem when large areas of infected territory are to be treated for purposes of sterilization. For it must be borne in mind that sterilzation by a chemical antiseptic is fundamentally a chemical process, involving a reaction between the substances operated on whereby both are altered in composition with a change of properties. This reaction takes place in harmony with the law governing all chemical changes, viz.: in definite proportions by weight, and to effect complete sterilization the amount of the antiseptic used must be in proportion to the quantity of septic matter present. To illustrate: whenever mercuric chloride performs its functions as a germicide, it does so by virtue of the fact that it has entered into combination with some of the elements of the septic matter, and in so doing undergoes an alteration of composition whereby it ceases to exist longer as mercuric chloride, the action continuing as long as there is material for the sublimate to act upon, and presumably at the expense of the germicidal activity, for it has been shown that bacteria may be cultivated upon the coagulum resulting from the action of mercuric chloride upon albumen. If this line of reasoning should prove to be correct, the quantitative limitations of use for mercuric chloride must be extremely narrow, possibly not much, if any, beyond the safe physiological dose, unless under special and unusual conditions.

What has been stated of mercuric chloride probably applies in the main to all chemical antiseptics, and if true must necessarily greatly restrict the use of those which are active poisons. So far, the ideal substance is yet to be discovered, if chemical antisepsis, particularly as a therapeutic procedure, is to become a fixed factor in general surgical practice.

The dental aspect of the question presents some characters which require special consideration.

So far as sterilization of the oral tissues is concerned, either in health or when infected, the use of chemical antiseptics involves about the same restrictions as those which appertain to their use in general surgical work. In the treatment of pulpless teeth, however, they have a legitimate field, and their beneficial results are positive, simply because the factor of vitality of the tissue is absent and the problem is reduced to the simplicity of an ordinary chemical process. Perhaps nowhere in the domain of bacterial pathology or in the relation of chemical antisepsis to therapeusis have we a better example of the limitations of antisepsis than in the treatment of pulpless teeth. Given a tooth containing the highly septic débris of a putrescent pulp, and so long as no infection of the pericemental membrane has occurred, the sterilization of such a tooth by proper chemical trearment is a very simple matter; but once let inflammation set up through septic infection of the surrounding membrane, and antiseptics *per se* are powerless to control it—or may even do harm.

The enthusiasm begotten of the discovery which announced the germ origin of diseases seems to have o'erleaped itself, as expressed by an unwarranted faith in the merits of chemical antisepsis ; but in the light of experience and investigation the pendulum is swinging back to a point where, rejecting the errors, we may hold fast to that which is good in it by reason of a just appreciation of its possibilities. —EDITORIAL, *Dental Cosmos.*

THE RED COLOR OF CARBOLIC ACID.

E. Fabini considers that the probable cause of the partly liquid condition of Phenol is the presence of ammonium phenoxide, and the brown color is attributable to the presence of copper or iron, 0.0001 per cent. of either of these metals being sufficient to cause a dark brown coloration. If reduced copper be dissolved in pure phenol out of contact with the air, a yellowish brown solution is formed, which does not become red. If this solution be shaken with one part of water, light brown flakes are precipitated, which are insoluble in alcohol, ether, etc. The phenol containing this compound, *copper diphenyl*, ($Cu\ Ph^2$), becomes intensively carmine colored when treated with a little ammonia and hydrogen peroxide. If the coloring matter be precipitated with water and extracted with ether, the copper diphenyl remaining has not lost weight.—Notes on *New Remedies.*

THE PATHOGENIC MOUTH-BACTERIA.

Dr. W. D Miller is publishing in the *Dental Cosmos* a series of papers of great value and importance to every scientific reader, and especially to every physician, on "The Human Mouth as a Focus of Infection" From the second of these articles this abstract is made.

Twenty-three distinct bacterial forms have been cultivated from the saliva on artificial media. These are mentioned with the number of times they have been observed and their effect when injected into mice, rabbits, etc. On account of the large number of different micro-organisms commonly found in the human mouth, it is with few exceptions absolutely impossible to arrive at any conclusion regarding the presence or absence of any particular kind by a simple microscopic examination. Cultures on agar-agar often fail of their purpose, since many pathogenic mouth-bacteria do not grow on this culture medium, or they grow so slowly that they are soon overgrown and hidden by the more proliferous saprophytes of the mouth. Gelatine is still less adapted to the purpose. Consequently recourse must be had to the animal body for the purpose of isolating such pathogenic micro-organisms as may be present in the saliva at the time of the examination.

The person whose saliva was to be examined was always instructed to intermix the saliva, by rubbing with the tip of the tongue against the cheeks and gums, with dead epithelium or other films and deposits which are often found clinging to the mucous membrane, and constantly carry enormous numbers of organisms. One or two drops of this saliva was then injected into the abdominal cavity of a white mouse.

Of the one hundred and eleven mice thus operated upon, twenty-seven died within fifteen hours ; twenty-two in from fifteen to twenty-four hours ; eighteen in twenty-four to forty-eight hours ; eight in two to four days ; nine in four to eight days ; thirteen in eight to twenty days ; four in twenty to forty days ; ten being still healthy after the expiration of thirty days, were put down as having escaped infection. It is quite possible that one or the other of these ten, if kept longer under observation, would still have succumbed to the effects of the inoculation. The serous or sero-purulent exudation in the peritoneal cavity usually showed large masses of bacteria, among which certain forms appeared almost constantly. These were examined microscopically and are described in the article, with superb illustrations. They were also cultivated on agar-agar and on other nutrient media.—*The Microscope.*

WATER AS A LOCAL ANÆSTHETIC—ITS DISCOVERY AMERICAN AND NOT GERMAN.

For some time past an item has been going the rounds of the press, both medical and lay, in this country, to the effect that a German Surgeon, Dr. C. L. Schleich, has recently shown, by experiments upon himself and his assistants, that water is a local anæsthetic, when injected hypodermatically. This first appeared, I believe, in the *Deutsche Medizinische Zeitung*, No 66, 1891. The *Medical Record*, among other journals, a month or so ago briefly mentioned it.

I have waited since then, expecting as a matter of course that someone would come forward to correct the idea that this discovery is anything new ; for many physicians besides myself must know that it is an old story.

In 1885 I called on Dr. William S. Halsted, then of this city, now Surgeon in Chief at the John Hopkins Hospital in Baltimore.

I was at that time making some investigattons in regard to local anæsthetics, and Dr. Halsted was better informed than myself.

In the course of our conversation Dr. Halsted remarked that he had recently been using water by the hypodermic needle as an anæsthetic for small operations, and with success; that only the day previous he had employed this method in the removal of a small tumor from a patient living on the same block in which his office was situated; and that he had found that this plan succeeds best when the water is thrown into the skin, not beneath it; in other words, that the more superficial the incision is to be, the more satisfactory will be the anæsthesia by water.

I was much interested in this statement of Dr. Halsted's; and in order to satisfy my curiosity as to just how the water obtunded sensation, made a few experiments upon my own person. It occured to me that possibly the anæsthesia might be mechanical only, and due to pressure, by the water, upon the sensory nerve-endings. In one of these experiments I tried to produce an equal or greater amount of pressure by another means, and then see whether sensation was abolished thereby. Dr. F. A. Manning, of this city, assisted me on this occasion. A hypodermic-needle was attached to the tube leading from my compressed-air receiver, which had been pumped to a 40-pound pressure. This needle was now inserted beneath the skin of my left forearm, and the tap turned on slowly. The air distended the subcutaneous cellular spaces and then stretched the skin to tenseness and the production of very considerable increase in circumference of the limb. We continued until the crackling feel of subcutaneous emphysema could be noted, on pressure, from the fingers to and including the shoulder; and the skin of the forearm felt to me almost as tight as a drum-head.

The æsthesiometer was used both just before and upon concluding this experiment; and, briefly, it was shown that while some numbness was produced, the sensation was not enough abolished to permit a cutting operation without pain; and that water probably has an analgesic property of its own.[1]

As an additional evidence that the analgesia from subcutaneous use of water is nothing new, I quote the following passage from Bartholow's "Materia Medica," 5th edition, 1885. p. 690; subject, Aquapuncture: "It is a remarkable circumstance that aquapuncture has the power to relieve pain in a superficial nerve. So decided is this effect that there are physicians who hold that the curative effect of the hypodermatic injection of morphine is due, not to the morphine, but to the water!"—Dawbarn (R. H. M.), *Medical Record.*

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[1] For further details see my article on Surgical Emphysema, in Wood's Reference Hand book, vol. ii, p. 678.

A well known Philadelphia pharmacist has recently received the following written orders for medicine: A dose of castor oil for a child aged fifteen. Be sure and send enough to work her good One dozen two ounce quinine pills; one bottle honeatta water; a boo gee; one box of Brandteth's pills, sugar quoted. Please send enough appecac to throw up a four months old baby; two five-grain blue mask pills; ten cents worth partisapated chalk.–*Medical Record.*

PHAGOCYTES.

It is well known that the introduction into the body even of extremely virulent species of bacteria does not always cause disease. It is furthermore established that when recovery from a bacterial disease occurs, the germs after a time disappear from the body. These well known facts show either that the body possesses the power of directly destroying certain bacteria, or of furnishing conditions which are so unfavorable for their life that they die.

It is believed by many that certain cells of the body are capable of taking up bacteria, which get into the tissues, into their protoplasm, and there destroying and perhaps digesting them, and that thus the destruction of bacteria in the body may be brought about.

Others believe that certain of the body cells, the leucocytes, for example, which are often found gathered about masses of bacteria in the body, cut off the supply of oxygen or nutriment from the germs and thus cause their destruction.

The cells which take up into their bodies the bacteria, as well as other foreign bodies, are called phagocytes. This assumed mode of destruction of bacteria forms a most suggestive and fascinating hypothesis, but its significance and importance are not yet very fully demonstrated.—Delafield-Prudden, *Pathological Anatomy and Histology.*

A PECULIAR CASE.

Mrs. P——, about two years ago had a left inferior first molar crowned—gold crowned. The tooth was so much decayed at the time of the operation, that this course was thought preferable to any attempt to fill it; the pulp still living, not exposed; the dentine in the cavities of decay somewhat sensitive. The gold crown being set had such contact with the upper molar that it was necessary to dress it, and in doing this, at two points the crown was cut through, exposing the cement beneath at only a small surface. Repair was not then made of these points,—they were permitted to remain with the cement exposed; and either for want of attention on the part of the patient or the dentist, the case had gone along in this condition for the time above specified; the openings through the gold meanwhile becoming considerably larger by wear. During the last two or three months there had been an increasing sensitiveness of the tooth in mastication, so that, for the last six weeks or more, it had been impossible to masticate upon the tooth. There was no periosteal trouble, striking upon the tooth causing no pain; but the moment any attempt at mastication upon the tooth was attempted, unbearable pain occurred. The cement seemed apparently in good condition at the openings. The annoyance became so great that the removal of the crown was decided upon. This was done a few days ago. The crown was very firm in its position, so firm that it was cut open on one side and simply stripped off the tooth and the cement which held it in position. This being done, examination with the instrument revealed the fact that the cement opposite the openings of the crown was somewhat softened, though not wholly disintegrated, so that moisture penetrated it, and so it afforded but little if any resistance to pressure upon it. Upon removing this it was found that the dentine beneath was beginning to decompose, and was exceedingly sensitive, so that the mere contact of the instrument with the surface caused excrutiating pain. A few thrusts of a sharp excavator at this affected portion almost entirely relieved the sensitiveness; and when all the dentine affected by decay had been removed, there was scarcely more than the normal sensitiveness of the dentine. The exposed surface was thoroughly dried, carbolic acid applied; it was then covered with a hard sticky wax, and the patient dismissed. An examination after twenty-four hours revealed the fact that there was scarcely a vestige of return of the former trouble, and masticating upon that side gave no pain, though the patient was somewhat timid about it. This case had been examined by two or three dentists without any conclusions as to the cause of the trouble; indeed, it did appear obscure, but after going to the bottom of the matter, it was very clear. By the influence of moisture and mastication, the cement inside of these little openings had softened enough to admit moisture, and the chill of cold fluids, which caused great pain, and sufficient movement of the cement to irritate the sensitive dentine beneath.

Now, the teaching of all this is, never permit an opening through a gold crown upon a tooth or root having a live pulp, though it may apparently be secured by the cement within the cap; usually, if such a little opening is made, by dressing for proper occlusion the breach can be repaired by simply dressing out enough to receive a little gold filling, in that way such openings can be effectually stopped. Another lesson is taught by this case, never rest satisfied with an obscure case without making thorough examination. It is well to attempt very little treatment, and in most cases none at all, when one cannot reach to the bottom of obscure cases.—Taft (Prof. J.) *Dental Register.*

"MIND WAVES" IN A PROMENADE BATH.

"How gently these little waves lap up against us! Does either of you gentlemen believe in mind waves?"

"I don't know what they are," answered the butcher."

"If you mean a wavering of the mind," answered Lord Crabstairs, "I have had it often; particularly when I bought my last cow. I wavered between Alderney and Ayrshire for nearly a month, and, after all, I bought a Devon."

"Oh, it is n't anything like that," said the young woman. "It is a sort of understanding between minds that are far away from each other. It comes along in a sort of airy waves something like these ripples, I suppose, and the thoughts and feelings of one friend go to another ever so far off."

"Oh, I know what it is!" cried Lord Crabstairs. "You can do it with snails. You go to China and take a she-snail with you, and I stay here with a he-snail, or vice versa. I can go to China with either and you can keep the other——"

"Do they have to be a married couple, to begin with?" asked the butcher.

"What! the people?" cried Lord Crabstairs.

"No, the snails," said the butcher.

"Yes," replied the other. "I forgot to say they must be a pair, so that there shall be a sympathy between them." Then again addressing the lady, "You have one snail and I the other one, and we've got the whole world between us. Whichever of us wishes to communicate with the other takes a pin and jabs his or her snail, as the case may be, and in that very same instant the other snail wiggles."

"Horrible!" cried Dolor Tripp. "If I had to do that I would never communicate."

"I don't believe it hurts them," said Lord Crabstairs. "The least little bit of a prick will do, and we could get up a jab alphabet; one short jab, a long jab, two short jabs, with a rest between them—three long jabs, a rest and a short jab, and so on."

"I never would do it," said Dolor Tripp, firmly, "I would n't even watch wiggles that were made by pins in China."—STOCKTON, (F. R.) *Merry Chanter.*

CHEMISTRY? IS THERE SUCH A SCIENCE?

An intelligent man denies that chemistry has anything to do in the formation of material substances. He insists that its work is solely destructive. It takes apart compounds, but has no influence in their formation. He believes in chemical analysis, but denies syntheesis.

Another class seems not to know or care about the existence of such a science. Compound substances are formed, and the members of this class rather think their formation is due to the action of minute organisms called microbes, perhaps.

It is well to bear in mind, however, that compounds that we have hitherto called chemical are always definite in their nature. For example, water is composed of hydrogen and oxygen, sulphuric acid, of oxygen and sulphur, etc. So definite are they that they can be composed of no other ingredients. On the top of the mountain, and in the dell water is water, composed of oxygen and hydrogen, and these are not mechanically mixed, but in combination, so that to appearance a new substance is formed.

If there is such a science as chemistry the above sentence is its first law of combination, that is, chemical compounds are definite in their nature. As water, wherever found, whether solid, liquid or gaseous, is always found to have the same constituents, there seems to be a law determining the same; and by further research it is found that all compounds are definite in their nature.

And, it may be added, that compounds are constant in the ratio of their elements. Water is always composed of oxygen and hydrogen, and these elements are always in the proportions of eight parts, by weight, of oxygen to one part of hydrogen. By further investigation it is found that each element, in the formation of compounds, unites with other elements by laws as definite as those governing oxygen and hydrogen in the formation of water.

Hence we have found two laws, viz : Chemical compounds are definite in their nature, and they are constant in the ratio of their elements. In millions of cases, it is found that neither of these laws is violated. It seems as if there were a force or principle that acts as if elements were choosing their companions, and by agreement this principle is called affinity, sometimes chemical affinity. And the science which has to do with this principle is called chemistry. Two sciences enable us to know all that we can find out about matter. The one is natural phylosophy, or physics ; and the other is chemistry.

The two fundamental laws already alluded to demonstrate the existence of such a science, but let us see if there are not other laws going still further, in proving such existence.

The ratio of union between two chemical bodies is the ratio of their union between other bodies. For example, eight and one express the ratio of union between oxygen and hydrogen, to form water. It was common to say, in the former nomenclature, that these numbers were the combining proportions of these elements. The term equivalent is more convenient than combining proportions. Nitrogen, another gaseous element, has for its equivalent, about fourteen. Oxygen unites with it in the proportion of eight to fourteen, to form nitrous oxide. Calcium, a white metal, combines at twenty, and eight parts by weight, of oxygen unite with twenty of the metal to form lime.

And it is ascertained that there is another law as peculiar as those already considered. When one element unites with another in several proportions, these bear a simple relation to each other. For example, oxygen combines with nitrogen in several different proportions. Not only do they produce different substances, but the relative quantities of oxygen uniting with the nitrogen, bear a simple relation with each other. Fourteen parts by weight of nitrogen will combine with eight parts of oxygen to form nitrous oxide, or with sixteen parts to form nitric oxide, or with twenty-four parts to form hyponitrous acid, or with thirty-two parts to form nitrous acid, or with forty parts to form nitric acid. But these numbers bear the simple relations of one two, three, four, and five times eight. These relations are not always quite so simple, but they are so simple that they do not violate the law.

Another law that is never violated in the formation of compounds may be expressed as follows : The equivalent of a compound body is the sum of the equivalents of its elements. This is not mere fancy, but is demonstrated by research and experience. For example, the equivalent of calcium being twenty, and that of oxygen eight, the equivalent of lime, which is oxide of calcium, is twenty-eight, according to this law, and the equivalent of water, being eight and one, of oxygen and hydrogen, it is found by experiment that nine pounds of water will slake twenty-eight pounds of lime. That is, that much water will combine with the lime without wetting it. And this law, or principle, governs the foundation of all compounds.

Thus we have found chemistry a science, governed by laws ; and that it is a science coextensive with matter,—indeed overreaching the boundaries of the material universe. Imagine the farthest—the most distant particle of matter, chemistry not only has to do with that, but it is the only science that goes further on to ascertain if matter is present in the great beyond ; for only chemistry and omniscience can tell.

Chemical affinity must still be recognized as one of the great forces of Nature, and it produces changes in the properties of matter, independent of micro-organisms-—EDITORIAL, *Ohio Journal of Dental Science.*

TO CAST PLASTER OF PARIS "DEAD."—POTASH ALUM.

A singular and heretofore unobserved phenomenon in connection with the setting of plaster mixed with plain water is pointed out by Dr. Bowman Macleod, of Edinburgh* from which he draws conclusions so practically important concerning its influence in modifying the adaption of a dental substitute, as well as in other respects, that space is here given to such of his observations as are deemed essential.

A block of plaster was cast within a square of two feet, which on the following day showed an expansion of five-sixteenths of an inch in length and breadth. " But I found," he says, " that not only had the plaster expanded, but the upper surface was raised ; and on sawing the block through in a diagonal direction, I found that instead of the block lying dead upon the plane beneath, it presented a concave surface toward the plane, the highest point of which measured one-half inch. This showed, first of all, that the plaster had not only expanded, but had done something more than its now greater length and breadth would lead one to suspect ; for, in thus taking a concave form, it must either have retracted to an equal extent, or expanded in an irregular manner, causing warpage.

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*Transactions of the Odonto-Chirurgical Society.

"Making still further experiments by casting plaster in the ordinary impression cup, I found, invariably, the same result produced, and that the center portion—the palatine portion—of the cup always presented an open and well defined space between the upper surface of the impression cup and the lower surface of the hardened plaster. This circumstance, therefore, would produce in your model a fault similar to that resulting from the sucking of waxy or resinous impression materials, and, as you can readily see, would give you a much higher dome than that of the natural arch. Hence the rocking of the plate, which has hitherto been attributed—if my deduction be justified—to every cause but the right one.

"Continuing my researches, I found that although in the equal surface and depth of thc modeling tray, the defect always ran in one direction, yet on pouring the plaster into irregular molds, such as the impression of the mouth, the position of the point of warpage was not always persistent, but seemed to be controlled by the thickness of the superincumbent layer of plaster, and this led to the conclusion that while in some instances the defect would determine itself on the palatine ridge in the shape of an exaggerated dome, at other times, and that more frequently in under dentures, it would express itself in irregalar lateral expansion, and consequently misfit upon the posterior portion of the alveolar ridge. Naturally, then, I began to inquire how this defect might be overcome, and I find that by the addition, to the water with which the plaster is mixed, of potash alum (hitherto used entirely for the purpose of quick setting in impression taking), in the proportion of from three to four ounces to the gallon, you will entirely overcome the irregular expansion and consequent warping which takes place in coarse plaster-of-Paris as used with water alone. But here you have the two blocks of equal dimensions—one cast with water, and the other with potash-alum water. It requires no explanation on my part to point out the difference between the two. In the one case, the expansion is five-sixteenths of an inch ; warpage, one-half inch. In the other, expansion, *nil;* and warpage, ditto ; and the two surfaces dead.

"You have here a series of impression cups of various sizes and shapes, filled with plaster, cast with pure or plain water, and with potash alum, and which require but to be examined to convince you of the fact of the deadness of plaster-of-Paris when treated with potash alum, and its behavior under ordinary circumstances. The conclusion I draw from this is, that all plaster, either for impression taking or for models, should be cast with potash alum, when strict and definite results are to be obtained ; and that in the case of gum block work, that opening of the joints—which has hitherto caused so much trouble to practitioners, and, to a great extent, has prevented the more general adoption its other merits might have commanded, and which has drawn out many suggestions as to the best mode of prevention—the opening of the joints may now be entirely prevented by the use of potash alum for both matrix and model within the flask."—*Richardson's Mechanical Dentistry*.

WHERE SHOULD PAPERS BE PUBLISHED?

The impression has gone abroad in the dental profession that, while it is numerically strong, it is lamentably lacking in intellectual and financial strength, and needs the help of the large business interests to enable it to advance. The time has come when dentists should not only be inspired with other views, but should refrain from all expressions that seem to lack faith, not in its ultimate possibilities, but in the position already attained.

We were impressed with the remarks made at the New York Odontological Society in June last, and published in the October number of this journal, and especially with those made by one gentleman present. The statement exhibited a condition of mental antagonism not at all creditable to the individual quoted by the speaker. In order that the subject may be understood, we give a portion of Dr. Bogue's remarks in reply to Dr. Meriam. After some preliminaries he stated :

> "In making application as one of the members of your executive committee to a gentleman for a paper to be read before this Society, I was met with almost a prompt refusal, on the ground that papers read here would not be published in the *Dental Cosmos*. I undertook to argue the gentleman out of his decision, but was met by the *strong argument* that the *Dental Cosmos* had attained a position that made it the most *widely read of all the dental journals*; if he had taken the trouble to get up a good article he wished it to be read as widely as possible......Now comes the question, Are we sufficiently strong to fight our own battles? Are we yet able to take the position as an independent profession ...casting aside personal self interests and laboring for the good of others?" [Italics ours.]

The reasoning that would lead to the refusal of a paper on such grounds must be very defective. It is unquestionably true that to publish an article in certain dental periodicals, intended solely for advertisement, would be destructive, and result in burying the paper beyond all hopes of resurrection.

The question to be considered is, Have we in dentistry a large body of readers? Dentistry is physically a very trying profession, perhaps more so than any other. Very few persons after standing all day over the chair, subjected to the nervous anxieties of patients, are equal to spending their evenings in reading, much less in study. Besides this, it is well known that full practice means constant extra hours of labor, oftentimes far into the night, to keep up with the increasing demands of the clientele. This overtaxing work inevitably decreases the number of readers, and has also had the effect of limiting the number of those willing to write for societies and journals.

This being the fact, and it is indisputable, it naturally follows that those who will care to take professional journals must be confined to three classes,—

1. Those who desire to keep themselves fully abreast with the progress of scientific development, and who will endeavor to read everything as it appears, not only in one, but in several journals.

2. Those who take a journal to skim over its contents for any practical ideas, and give the advertising pages special attention for the same reason.

3. Those who take one journal solely for the advertisements.

It is probably true that of the fifteen thousand dentists in the United States, not more than forty per cent., or six thousand, judging by subscription-lists, take any journal regularly. Exactly how many may be classed under each of the three arbitrary divisions made it would be difficult to determine ; but it is very safe to assume that one-half of the six thousand belong to the third class, who take a journal for its advertisements, while the balance may again be equally divided between the readers and those who seek only for practical ideas. This calculation reduces the leading journals to a common basis. Those which meet the higher wants of the first class will be taken and read, and it is immaterial whether the circulation be much or little, the result is the same as far as the distribution of ideas is concerned. If any doubt these conclusions, take any twenty dentists and interrogate them as to the contents of certain journals. The result, we think, will amply justify the statement made that dentists are not, regarded as a whole, devoted readers of their own literature.

If these conclusions be admitted, the person who habitually gives his productions to the journal supposed to have the largest circulation may not be making a mistake in so doing, if he wishes to have his article spread over the greatest number of pages ; but he errs most decidedly if he supposes he will secure an increased number of readers.

That journal is the best and the surest medium for original thought which bases its reputation on the highest standard attainable, and which meets the needs of the most cultivated class in the profession.

The labor to sustain such journals is one worthy of our highest endeavor. It must be above selfish motives. It must recognize the fact that in such periodicals nothing is lost. They are the ones preserved, and eventually they become centres of reference. Libraries gladly receive them, and they develop in the largest sense not only the instructors of the present generation, but those which are to follow.

The remarks made at that meeting were unintentionally, we are disposed to believe, aimed at this journal. To disparage such an effort as the *International Dental Jaurnal* represents by bringing it in comparison with a journal of supposed larger circulation, may be interesting in a discussion, but is not the way, as we view it, to enlarge the sphere of professional usefulness. We are interested most in the fact that the journal alluded to, the *International Dental Journal*, and all others of the character described, will be read equally, and their articles will be copied in proportion to their intrinsic value. In proof of this it may be stated that many of the papers published in this journal have been extensively republished abroad, and the subject-matter of several has elicited wide discussion. This has enlarged the circle of readers of some of the most valuable scientific articles published in the present volume.

The battle then can be, *must be*, fought within our own lines. Without vigorous and persistent effort no advance can be made. Opposition and contest means increased strength, and without it all effort becomes, in the end, weak and vacillating.—EDITORIAL, *International Dental Journal.*

PHAGOCYTOSIS.

Among the factors in producing immunity against disease, is the very interesting phenomenon known as phagocytosis *i. e.*, the destruction of micro-parasites by microphages of the body,—certain cells of various organs and of the liquids of the economy, such as the spleen, blood, etc. In this war against bacteria the animal cells englobe the former, swallow them, fill themselves full of them sometimes, until they are enormously bloated, and even split open. The death of the bacteria, and often of the microphages, results, probably from the action of both the products of animal cells and bacterial organisms, for vacuoles of liquid soon form a microphage containing microbes in its body. The foremost expounder of this factor in immunity is the eminent Russian bacteriologist, Metchnikoff, of Pasteur's Laboratory. We present, in this issue, some striking illustrations of his on the subject. They will prove of interest to all who may study them.—*Bacteriological World.*

EROSION.

. I have had a great many observations upon this subject of erosion, and am more strongly inclined than ever to the belief that the acid-mucus theory as advanced by Professor James Truman, and advocated in my paper before this society (First District), is correct. The confusion which has existed in the minds of many regarding it and which may have retarded its general acceptance is in some measure, I think, due to the fact that the protean character of its manifestations in the teeth has led to difficulty in classifying its varied expressions in their proper relation to one general cause. But if we look upon erosion of the teeth not as a disease in itself, but merely the effect of some systemic derangement having a local dental expression, and its various, dental manifestations as but progressive stages symptomatic of a similarly progressive systemic disorder, we are likely to obtain a clearer understanding of it.

I am so fully convinced of the truth of the theory that I have about ceased to question in regard to it, and have devoted myself more particularly to investigating the cause of the acidity. Along this line my observations, so far, induce the belief that *erosion, strictly so called*, of the teeth *is in all probability a pathognomonic symptom of the gouty or rheumatic diathesis.* I have never yet met a patient with erosion fully established who was not a sufferer from gout or articular rheumatism, except in two instances, and in these a marked hereditary tendency in this direction ; not only this, but according to my observation the converse is true, for I have always found erosion of the teeth present in gouty patients. It would throw much light upon the question if we had some means sufficiently delicate for detecting uric acid, which we could apply as a test to the mucus secreted by the buccal mucous glands in erosion cases, but so far as I am aware this cannot be done satisfactory. It is well to remember, in assigning the gouty diathesis as an etiological factor in the condition we know as erosion of the teeth, that the gouty or lithic acid diathesis does not necessarily imply the occurrence of acute attacks of gout in a patient. Gout is regarded as a tropho-neurosis, affecting the digestive and assimilative functions, and is associated with errors in these that are expressed frequently as disordered liver, acid dyspepsia, diarrhœa, etc., while there may be no occurrence of acute gouty attacks, but all cases are characterized by an excess of uric acid in the blood-serum, secretions, etc.

It is evident, of course, if the relation between gout and erosion of the teeth is a casual one, that our efforts at treatment so far as prophylaxis is concerned must first of all be directed toward constitutional treatment. This should include proper hygienic and dietary measures, and the use of remedies which tend to the elimination of uric acid from the system. For this latter purpose I have recently used with beneficial results, so far as the systemic condition is concerned, a combination of sodium phosphate with salicylic acid. Its action is believed to be due to the sodium salt rendering the uric acid soluble by combining with the salicylic acid to form sodium salicylurate, which is eliminated by the kidneys.—KIRK (E. C.), *Dental Cosmos.*

LOWER DENTURES, FULL AND PARTIAL.

If there is any one thing in the experience of the dentist that is especially annoying it is pertaining to the insertion of *lower teeth*, full or partial.

From the nature of things the patient cannot, as a rule, derive the satisfaction from their use that results from the use of the upper set. As I say to them in explanation of the subject, the upper set covers a large surface, and is held in place by atmospheric pressure, while the lower set, in a large majority of cases, simply sets upon a narrow ridge, with no atmospheric pressure except in rare cases, and is easily moved by the action of the muscles.

In rare instances there is found a broad, high ridge; such cases are of course favorable, but my experience has been more with cases with no ridge at all, but flat and sometimes depressions. For some reason, not satisfactorily explained, there is more absorption in the lower jaw than the upper, even when no plate has been worn, as is often seen in those cases where the bicupids and molars have been missing for many years.

Additional *weight* is an advantage in lower dentures. It is absolutely necessary that the plate should be sufficiently narrow not to be lifted by the muscles, and especially upon the lingual side, where often exists a mass of membrane which lifts higher than the top of the ridge. Upon the labial side the muscles, and even the membrane lifts almost to the margin of the ridge by the movement of the lips. I have had occasional cases where the outer margin of the plate had to roll upward instead of downward.

And yet with all these disadvantages it has seemed to me preferable to wear a full set rather than a partial. Although I have not advocated the extraction of the six anterior teeth, I have seen cases where I was sure the patient would have better success with the pressure distributed over the whole surface rather than upon the posterior alone. Then again the partial sets are always giving way under the pressure they receive, and as the plate settles, the portion of it which passes behind the anterior teeth will crowd upon the membrane at the necks of the teeth. For this reason the plate should never be fitted just to the necks of the teeth as is often done, for then great harm results from the points pulling upon the membrane causing injury to it and discomfort to the patient. These plates should be extended well upon the necks of the teeth. The plate will set the steadier for it.

Recently, however, in view of the trouble and annoyance so often arising from wearing full sets, I have been greatly impressed with the value of retaining even a single tooth if it be firm, or a root, in order to secure anchorage for a plate.

My attention has been especially directed to this in the use of the method of Dr. Stedman, of Laporte, Ind., which I am sure is proving a complete success, and great relief from a long-felt need.

The method is this: Instead of using an ordinary clasp of platinized gold, a band as wide as the full length of tooth, even though it does show, and extending around the tooth, or as far as adjoining tooth will admit, but always open made of 24 gauge gold without platinum. Solder a spur to the lingual surface to hold it to the rubber. Take the impression with the clasp *on the tooth* as this is the only method of securing the perfect adjustment of a clasp to a rubber plate. If only a root remains crown it, and fit a band to it as before described. If the tooth to be used as an anchorage is badly shaped, for a band to be fitted to, *crown* it first. I have had success with this method such as I never realized before.—HASKELL (L. P.), *Ohio Journal of Dental Science.*

HOW TO PREPARE HYDROGEN PEROXIDE.

A French chemical journal gives the following as a simple method of preparing a solution of pure hydrogen peroxide. Mix barium peroxide with water to the consistency of thin milk. Decompose the peroxide by the addition of HCL, specific gravity

1.100. Add to the mixture one-fourth its volume of ether, and shake well. The ether dissolves one part of the hydrogen peroxide. Turn off the ether, and shake with twice the volume of pure water. The water will take up a great part of the peroxide. Separate the ether, and add to a fresh barium peroxide solution. After shaking, decant the ether, and mix with the same proportion of water several times. By repeating the operation the water may be made to take up more of the hydrogen peroxide, till it contains from 5 to 9 per cent. of this valuable disinfecting agent. A small amount of ether in the solution will aid in its preservation.—*Bacteriological World and Modern Medicine.*

PHAGOCYTES—WARRIOR CELLS.

Our body is a well-organized State. The cells with which life is so intimately bound up, are its citizens, and the number of these citizens is legion. In comparison with the cells in our body, the human population of the earth is insignificant. The red blood corpuscles alone whose function is to carry and distribute oxygen, are estimated of approximately twenty-five billion in the body of an adult man.

These industrial communities, although shut in from the outer world by a panoply of skin, are by no means secure in the enjoyment of a tranquil existence. Devious highways connect their most sheltered recesses with channels communicating with the outer world, and through these they are assailed by legions of no less insignificant foes, who invade the several provinces of the kingdom to lay waste and destroy. These invaders are the bacteria, which are now recognized as the agents of so many diseases.

Nature has endowed our organisms with forces to resist disease germs, and cases occur daily in which people are restored to health by the agency of these unknown defenders. The cells proper to the system are under investigation, and among them some investigators profess to have discovered warrior cells, which in a certain sense may be regarded as a standing army of defense, and their function being to fall on and devour the invaders, they have been styled phagocytes.

These defenders of the human system have long been known, but their function, until recently, was not suspected. Every one of our readers has heard or read of the white corpuscles in the blood ; these are our anti-bacteria military, the most simply uniformed and most simply armed troops in the world, for they belong to the simplest forms of life. These white blood corpuscles, or leucocytes, are simple naked cells, consisting merely of a speck of protoplasm and a nucleus, but in spite of their simple organization, in spite of the absence of differential organs, they nevertheless act as other creatures act.

They have neither fins nor feet, but are, nevertheless, capable of progress. This is provided for by a property of protoplasm which admits of their putting out tentacles in one direction, which tentacles draw the body after them. They seize their foot with these tentacles, draw it to them, enfold and assimilate it. The tentacle which serves first to propel toward its prey, and then to grasp it, is finally used as a stomach in which to digest it. The nucleated speck of protoplasm, in spite of this structural simplicity, is further endowed with sensation, and the power of reproduction.

Such are the white corpuscles of the blood. At periods of inaction they present the appearance of colorless, round balls ; they are not found in the principal veins, being unable to stem the current. The seat of their activity is in the smaller veins and capillaries, where they wander at will, prey and eat like the beasts of the forest, or the monsters of the great deep. The number of these white blood corpuscles, in a grown person is estimated at approximately a hundred million. Related forms of the white blood corpuscles are found in the lymph, chyle, and other fluids of the system, even in the crystalline lens of the eye, where they traverse the instertices of the membrane, like adventurous explorers cut off from the main body of their race.

Similar wandering cells with amœba-like movements are also diffused through the lower orders of the animal kingdom, and in insects, and their study in these forms has led to some very interesting conclusions as to the part they play in metamorphosis and evolution. An opportunity for studying their activity in living forms, is afforded by the larvæ of sea-urchins and star-fish, whose skins are frequently transparent. The Russian zoölogist, Metchnikoff, has established that the leucocytes, in a manner, purify the blood. On the introduction of a speck of carmine or dust, they immediately close themselves upon it. In all evolutionary processes and tranformations of the lower animals, there are portions of the tissue which cannot be utilized in the new structure. They are thrown off as debris, and the leucocytes enclose and assimilate them. The same course is pursued in the metamorphosis of the tadpole ; the leucocytes congregate in the tail, and consume it. So, too, in the metamorphosis of insects, they perform the function of removing all unutilizable tissue, and practically, of converting it into utilizable material ; for these roving cells, at length, weary of their active independent existence, build themselves into the tissues of the organism to provide for growth, or for repair of the waste of decay.

On account of their habits Metchnikoff called these cells phagocytes, that is *devourers*, and as we have seen, they constitute an organized sanitary police.

The phagocytes prey also upon all foreign substances in the system, and consequently upon all invading bacteria and disease germs.

But the phagocytes are by no means invincible. They, too, are liable to defeat, and it is observed that the phagocytes of different animals vary in their attitude toward bacteria. Indeed, some investigators are of the opinion that the invading armies in warm-blooded animals, prey on the white blood corpuscles ; but even those who reject the phagocyte theory, admit that there are cells proper to the system which oppose the invaders.

Bacteriology is the youngest branch of the tree of knowledge. It has already achieved many triumphs, and will doubtless soon solve the riddle of the precise relation of the micro-organism to the cell. If at first glance it seems shocking to reflect that our bodies are the seat of vast communities who rove over it as over their own domain it should console us to reflect that in the pursuit of their own well-being, they are undesignedly efficient agents in achieving ours also. In fact, they are an army of sanitary police evidencing individually intelligent purpose in the overthrow of numerous foes, against which man himself has hitherto been powerless, and whose tactics he does not even understand.—*The Literary Digest.*

UNFERMENTED BREAD FOR DYSPEPTICS.

The inability of dyspeptics to digest bread, so frequently observed, is often wrongly attributed to an incompatibility of farinaceous substances with this disease. As a rule, farinaceous substances are particularly wholesome for the majority of the subjects of dyspepsia. The dilated stomach is unable to deal successfully with food substances which require much disintegration, and which require long digestion in the stomach. Farinaceous foods are readily disintegrated in the stomach, and quickly reduced to a state proper for admission to the small intestine, where their digestion is chiefly performed.

The reason for the disagreement of breads with dyspeptics has been clearly pointed out by Bouchard, Dujardin-Beaumetz, and others. It is not that the bread contains starch, but that it contains microbes capable of converting starch into a variety of irritating acids and other poisonous products. Speaking of the use of fermented bread by dyspeptics, Bouchard remarks :—

"In the use of bread, the crust alone should be permitted, or the toasted crumbs. The reason for this is that the baking of the bread has interrupted the fermentation of the dough, but has not permanently arrested it ; so that fermentation begins as soon as warmth and moisture present the favorable conditions. In torrified bread (zwieback) fermentation is, on the contrary, permanently arrested.

"What is panary fermentation? The general idea respecting this subject is that formulated by Graham. In the presence of cerealine (diastase), starch divides into maltose and dextrine. The maltose under the influence of saccharomyces, ferment to produce alcohol, and the carbonic acid gas which raises the bread.

"M. Duclaux, who has accepted this theory in principle, denies, however, the existence of alcohol in this form of fermentation.

"The question has been taken up by M. Chicandart. According to the result of his researches, neither soluble starch nor dextrine are to be found in dough undergoing fermentation. Neither sugar nor alcohol are found, but acetic, butyric, and lactic acids. The butyric and lactic acids are found even when pure gluten is fermented. There are also found leucin, tyrosin, and phenol, that is, the products of the fermentation of an albuminoid substance. It is, then, the gluten of the dough which gives rise to the products of acetic fermentations, in the presence of the bacillus glutinous. This microbe resists the temperature to which the center of the loaf is exposed during the baking, and may continue in the stomach the process of acetic fermentation. A knowledge of these facts shows the utility of unfermented bread, and of grilled, or twice-baked, bread in the dietary of dyspeptics."

It will be seen that this is a most interesting topic for investigation.—*Bacteriological World.*

PENTAL: A NEW ANÆSTHETIC.

Pental is the new name applied by Prof. J. v. Mering to *Trymethylæthylen*, a product of amylenhydrate heated with acids, and recommended by the distinguished clinician as a safe and effective anæsthetic. Pental is described, chemically, physically, and as to its possible utility, in the *Pharmac. Zeitung*, Oct. 7, 1891, and in the *Pharmac. Centralhalle*, Oct. 15, 1891 ; both journals conservatively withhold endorsement of the product, basing apparent skepticism on the fact that chemically the body has long been known, and that analogous amylens (for instance, *iso-amylen*) were employed as anæsthetics almost forty years ago, but quickly disgarded because found to be unsatisfactory and offensive, owing to their unpleasant odor.

So was cocaine well known; yet who will deny that the discovery of its wonderful properties was a revelation to the medical world, and worked a revolution in treatment and practice which will forever distinguish the name of the discoverer, Dr. Köller, whose publication in August, 1884, was responsible for the present universal application of cocaine.

While pental will probably not excite the same degree of interest as did cocaine, it is safe to assume—reckoning on the high character and recognized conservative authority of Prof. v. Mering—that this product will find valuable application. From reports already furnished, notably that of Prof. Hollaender, of Halle a. S., (*Therap. Monatshefte*, Oct. 1891), which was read before the Dental Section at the Convention of German Naturalists and Physicians, at Halle, this year, the new anæsthetic is shown to be suitable and efficient for minor surgical operations, and particularly in dentistry.

Pental (C_5H_{10}) occurs as a colorless liquid, of low specific gravity ; its boiling point is 38°C.; it burns with an illuminating flame, and is readily inhaled without affecting the membranes of throat or passages. It is insoluble in water, but miscible in all proportions with alcohol, chloroform or ether, and being inflammable like the latter, must be protected from possible ignition. It is exceedingly volatile, but does not decompose on exposure in air or light.

The inhalations are simply conducted, 10 to 25 cc. of the fluid sufficing, and narcosis ensues within 50 to 90 seconds (Dr. Hollaender), without influence on respiration or the action of the heart, and causing no unpleasant side or after-effects. From a careful consideration of Dr. Hollaender's report, a most favorable impression of the value of pental is gathered, and we hope to supplement and confirm this by early additional original reports.—*Notes on New Remedies.*

OXYCHLORIDES AND OXYPHOSPHATES RELATIVELY GOOD CONDUCTORS.

We constantly meet in the journals and at meetings the statement that the oxychlorides and the oxyphosphates as filling materials protect the sensitive dentine from thermal changes, as they are nonconductors of heat and cold.

With this statement you are all familiar, and for all I know such may be the opinion of some who are present to-night. Practical experience with these materials led me to believe the contrary, and finally I was able to demonstrate, not only that the oxyphosphates and the oxychlorides are good thermal conductors, but also, to a certain extent, to compare this property of various filling materials with that of the natural tooth-enamel itself.

By the instrument used for the purpose, technically called a thermostat, I can more clearly illustrate the method of the tests. It is based upon the well-known property of the expansibility of metal under the influence of heat.

It consists of a slightly concavo-convex disk of zinc (used on account of its greater coefficient of expansion), which is rigidly confined at its periphery by being secured to a hard rubber or porcelain base. Directly in the center of the base projects a finely threaded screw which is capable of being adjusted to within a greater or less distance of the disk. Now, it is evident that when the disk is subjected to heat it cannot expand laterally, and so must bulge upwardly toward the screw, therefore the distance between the point of the screw and the disk, and the amount of heat applied to the latter, may be relatively adjusted so as to insure their contact at any predetermined degree of temperature.

If, now, this instrument is placed in circuit with an electric bell and battery with no contact of the screw and disk, there will be no sign, but the moment the circuit is closed by expansion of the disk to contact with the screw, the path for the current will be completed and the bell will ring.

The simplicity of this instrument is only equaled, I believe, by its phenomenal delicacy. In the one I now hold in my hand the disk and the screw are so adjusted that the warmth of my breath will swell the disk up to the point of contact, where it will speak for itself.

The method of testing the thermal conducting powers of various filling materials, and comparing them in that respect to enamel, is as follows: The enamel of a sound molar was hollowed out into the shape of a cell. Similar cells of the same size were made of gold, tin, amalgam, oxyphosphate of zinc, oxychloride of zinc, red gutta-percha, and Hill's stopping.

In the apparatus before me the thermostat is connected, the cells of the materials to be tested are at hand, and warm water is ready for demonstrating their conductivity.

I will first place upon the disk the cell of gold, and filling it with the warm water, our ears at once corroborate what we already know as to its conductivity. For no sooner had the gold cell been filled with the water than it at once conducted the heat to the disk beneath.

Replacing this gold by tin and amalgam successively, the same results are produced.

The oxychlorides and the oxyphosphates will follow, when it is readily perceived that more time is required to heat the disk, thus demonstrating them to be poorer conducting agents than the metals, but far from being non-conductors.

We will next try gutta-percha and Hill's stopping, which prove themselves much poorer conductors ; but give them time, and the bell does ring.

Lastly, I placed the enamel cell on for demonstration, with the result that sufficient heat to close the circuit is not transmitted to the disk.

From these experiments we may conclude that, contrary to the general opinion held, the oxyphosphates and the oxychlorides of zinc are relatively good conductors of thermal effects, and further, that for protecting the dental pulp nature has provided a shield that has not yet been successfully replaced by dental science.—KELLS (C. E.), *Dental Cosmos.*

COLOR IN PHOTOGRAPHS.

[Translated from the French expressly for the ODONTOGRAPHIC JOURNAL].

Nothing is required, except to know how to look at any photograph, one of those which we all have in our albums, to prove that the colors are there ! M. Baudran, an artist engraver of Versailles, has found this out, and sought to impart the discovery at a recent meeting of the "Photo-Club" of Paris.

Extraordinary as this may appear, and contested as it is, by certain savants and a few persons reputed competent in photography, we should give way before actual evidence. It is only after repeated experiments at different times, having called in the assistance of unprejudiced persons, that we have decided to speak of it to the readers of *L'Illustration.*

Those who have seen daguerreotypes have doubtless sometimes observed that in looking at the image at a certain angle, the colors of the model may be perceived ; especially those of the flesh. M. Baudran has raised the question whether suitable illumination of the positive prints on silver paper, which have replaced the daguerrean plate, would not equally reveal the colors, and experiment has demonstrated that he was not mistaken in supposing this to be the case. The modus operandi is simple.

The photograph is placed upon a shelf fixed to the exterior edge of an opening made in one of the shutters of a completely dark room. The picture turned toward the opening does not receive much direct light, but by means of a mirror placed upon the same shelf, the light rays may be reflected ; the glass is placed in such a position that its reflected light will strike the picture on the same side that the direct light fell upon the subject.

An objective is placed at the opening, which produces an enlarged image received upon a screen in the dark chamber. This image is colored. All the colors do not come equally well, sometimes only those of the flesh are seen, these almost always, though they may be weak, giving the effect of a pastel portrait effaced, but finally it can be distinctly seen that they are there.

The pictures giving the best results are those upon albumen paper. Those which are enamelled, which have for base a thick layer of gelatine, as for example aristotype paper, give poor results. We thought upon seeing the experiment for the first time, that it was an illusion, and that the observer simply saw those parts rose which he positively knew to be of that color, but we have placed before the image upon the screen, persons ignorant of the color of a gown, and they have indicated it clearly. The matter, besides, is not unexplainable, and it may be believed that here, as in the celebrated experiment of M. Lippmann, is a phenomenon of interference or rather perhaps of diffraction, the light being decomposed by the infinitely small grains formed by the nitrate of silver more or less diluted.

Without searching further at the moment for the explanation of the phenomenon, it is a good thing to know, and we hope that the savants,the investigators,who will all be anxious to try the experiment, will not only be able to perfectly explain it, but to draw therefrom the true solution of the problem how to make the living, glowing colors of the subject appear in the photograph.—G. MARÉSCHAL, *L'Illustration.*

BLACKENING OF THE TEETH BY ANTIPYRINE.

It is asserted that the internal use of antipyrine blackens the teeth ; this peculiarity should be generally known by the profession, and also among the laity, that objection may be made on this ground to taking it as a remedy. The blackening is the more intense, the more imperfect the enamel, but may be removed by attrition with dilute acid. The considerable use of antipyrine for several years back, gives importance to this later observation.—*Vierteljahrsschrift für Zahnheilkunde.*

FLOATING PARTICLES IN THE EYE, ("COBWEBS ON THE SNOW") A SOURCE OF ERROR IN MICROSCOPICAL OBSERVATION.

At the meeting of the American Society of Microscopists, held at Cleveland, I had the honor of demonstrating the fact that irregularity in the curvature of the cornea, which is almost constantly present in the human eye, interferes materially with certain microscopical work. This irregularity, known technically as astigmatism, frequently prevents one person from seeing fine lines, for example, those of the Nobert plate, or Diatom striæ, when these are placed in one direction, but they may be seen by another person in that position, or indeed by the same individual, if the position of the lines be somewhat altered. It was gratifying to see that the subject was of sufficient value to call forth one or two other articles in microscopical journals, corroborating the observation, and I think there is now no doubt that the existence of astigmatism must be regarded as a decided obstacle to the proper observation of certain tests by individuals who possess this peculiarity in any decided degree, and observation shows that in 96 or 98 per cent. this condition exists in a sufficient degree to be measured by a suitable instrument, called the ophthalmometer.

In the present short paper I wish to call attention to the fact that there exists in the eyes of almost every individual still another imperfection sufficient to cause a faulty observation, when looking at another class of objects.

It is a well-known fact that in the vitreous humor, a semi-gelatinous matter, filling up the greater part of the posterior portion of the eye, there are frequently floating small particles, which are known to oculists as " muscæ volitantes."

The origin of this imperfection does not concern us here ; it is only of interest to know that, though existing practically in almost every eye, ordinarily they are not visible, just as the dust in a room is not visible when the light enters through the widely open windows, and is equally diffused throughout the room; but if a beam of sunshine enters through a small opening in the shutter, then innumerable objects are seen dancing in the tract of the beam, not only reflecting the rays, but casting shadows behind them. So it is possible for almost any individual to see the small particles in the vitreous humor of his own eye. For this purpose it is necessary, however, to allow the light to enter it, not through the widely opened pupil, but through a small aperture (for example, by pricking a pin-hole in a card and looking through at the sun, or at some other source of very bright light). When this is done, the beam illuminates the particles which may be in the vitreous humor so strongly that they throw a shadow on the retina, and thus become visible.

The form of these particles varies considerably. Usually they are in the form of fine dots, more or less well defined, and occasionally these dots have such sharp edges and are so well marked or perfectly stationary that they can well be confused with certain microscopical objects which we shall consider presently.

Again several of these dots are joined in the form of a chain, or still again, several chains or particles may move together. These are the appearances most frequently observed.

Now, as to the application of this pathological, or, practically, physiological, fact to the use of the microscope. Let us see what the connection is. We have the same optical conditions. especially when high powers are used. The ray of light is a small one, as it comes through the small opening in the diaphragm, and must necessarily be as strong as possible. Then again the reason for using high powers is to observe more exactly exceedingly fine objects, and one of the branches of microscopical work in which these particles in the vitreous are most apt to give rise to mistakes is in the study of bacteriological forms. One fully conversant with the varieties and structure of bacteria, would not be apt, it is true, to confuse these imperfections in their own eyes with what might be actually under the microscope, but I not only know of this mistake having been made by those who are not without experience in bacteriological work, but it is not impossible for the same to occur to many whose observation has not been sharpened by long practice in the use of the microscope. I feel confident that, out of a dozen persons who make the drawings of what they see of such numerous, ill-defined objects, there would be two or three who would figure what is not in the field of vision, but an imperfection which actually exists in their own eyes.—HOWE (DR. LUCIEN), *The Microscope.*

LIVER vs. LUNG.

I look back with surprise at the months I passed as a crippled man, my head alone alive. My cheerfulness was due to temperament, and also to what I may call the temperament of my disease, for people who have spinal lesions without pain are apt to be more calm and unirritable than those who have certain visceral disorders. Consumptives are said to be hopeful, but the sick liver predicts damnation. A learned divine said a thing of extraordinary wisdom when he announced that no man, however secure he may be in his own mind as to his future life, ever dies a triumphant death with disease below the diaphragm.—*The Century*, MITCHELL (Dr. S. Weir).

CLINICAL OBSERVATIONS.

[Translated for the ODONTOGRAPHIC JOURNAL.]

1. *Two cases of anomalous roots in the lower jaw.*
2. *Therapeutic difficulty.*
3. *New treatment by automatic drainage.*

I.

I present two teeth in which the disposition of the five roots is as follows:

First type.—Inferior left first molar. The anterior group is composed of three very distinct roots, united by cement tissue; the roots corresponding to the posterior root of the normal tooth, are two in number and distinctly divided. I have penetrated each canal with a sound, passing in each beyond the apex of the root.

Second type.—Inferior left first molar.

This case exhibits a peculiar disposition of the roots; a group of four roots united by cement tissue, and one isolated root.

I have seen nothing like it in our museums, nor in Tomes or Magitot; for this reason I present to you these two interesting cases of anomalies to be considered from the double point of view of their anatomy and the difficulty of treating them.

II.

It is easy to imagine the therapeutic difficulty. As normally constituted, the first molars possess in order of frequency three canals, then four, as testified by very interesting work presented by M M. Chauvin and Papot to this society in 1886.

This tendency to multiplicity of roots, and hence of canals, has a very great importance in relation to such treatment as is practiced in our schools. The complete removal of the nervous débris, living or decomposed, is a very difficult thing with lower molars generally, especially so in the two types under discussion. How many broken sounds and nerve extractors, how many canals unexplored or imperfectly so! Besides, seven times out of ten, more or less serious inflammatory accidents are produced at periods more or less distant; the three successful ones, more apparently than really so, will compel removal of the amalgam, or an imperfect filling.

Skillful operators, conscientious dentists, have sought to find some way of avoiding this operation, sometimes painful for both patient and operator; let it suffice me to recall the much praised treatment by Witzel; antiseptic capping of the nervous débris after partial or total cutting away of the diseased pulp, filling with vegetable charcoal (Systeme Gillard); finally, the embalming of the pulp and its branches vasculo-nervous (*Revue Odontologique*).

These various processes have been employed, then abandoned, each in turn, to come back to the classical treatment.

III.

First, it is well understood that I do not commend drainage, even if perfected, I only admit its claim to exceptional use in the molars and canals difficult of access. The point of a nerve extractor accidentally left in a canal, mortified nervous débris which cannot be reached, etc., are the circumstances which justify this mode of treatment. All the other teeth, easy of access, are amenable to ordinary treatment, should one go as far as re-implantation. I say this to anticipate the criticism of such as are opposed to drainage, to which all, however, have more or less recourse.

I have seen at the clinic of the *rue Rochechonart*, drainage practiced through the white filling of a superior central incisor, of three years standing, and the tooth promised to be of service yet.

At the clinic of the *rue de l' Abbaye*, I have seen drainage practiced at the neck of a superior canine; the operation, of five years standing, had been performed by M. P., known as is his confrére K. as the possessor of great professional knowledge.

Description and Application.

This drain, which I have qualified as automatic, is constituted of a platinum tube, a valve, and a little spring placed inside the tube The tubes are straight or elbowed, according as it be desired that the valve open on the grinding or a lateral surface. The latter is preferable. If the grinding surface is chosen, the filling is slightly sloping.

The tooth should be treated exactly as if to be stopped by any kind of filling; extraction of nervous débris, hot air, etc. The application of the drain is thus not an encouragement for the ignorant or the idle, on the contrary it is supplementary to the ordinary treatment of the third and fourth degrees. It is simply to avoid filling the pulp chamber and canals.

The base of the drain embraces the whole of the empty pulp chamber in such manner that courses of cement hold it in the place it is to occupy, the filling being completed with the material selected for the purpose. Care must be taken to be sure that the valve works well, by means of a metallic thread soldered to it. This done, cut off the wire, and burnish the whole.

The little valve, though held firmly in place by the spring inside, can be raised by pressure of the gases. M. M. Blocman and Poinsot have made communications to the society relative to spontaneous fracture of the molars, in which the elastic force of the gases produced by the substances decomposed in the interior of the teeth, had been sufficient to burst them. Such, at least, was their theory.

Conclusions.

1. This drain applied in these cases for the reasons I have indicated, obviates periostitis with all its concomitant accidents.
2. The same advantages are afforded as by ordinary filling, since in case no gas is produced, the obturation is perfect.

Drains straight and curved are sold and manufactured by M. M. Coutenau and Godart.

Anomalies and models showing different phases in position of the drains, are in the museum of *L'Ecole Dentaire*, of Paris.—BARRIE, *L'Odontologie.*

PATENTS—ABSTRACTS OF DECISIONS.

Messrs. C. A. Snow & Co., Washington, D. C., have issued a little book of information and advice relating to patents, copies of which may be had on application. We clip the following from its pages :

A patent is *prima facie* evidence that the patentee was the first and original inventor. Cushman *v.* Parham, C. D., 1876, p. 130.

The making of an invention is complete when all that remains to be done is the work of the mere mechanic. Morse *v.* Clark, C. D., 1872, p. 58.

When a man has conceived the main idea of an invention and employs another to embody it, the product will be the invention of the former, though the latter may furnish hints, suggestions and decided improvements, unless the changes made by the latter amount to a new and complete invention. Foster et al. *v.* Fowle, C. D., 1869, p. 35.

An inventor may avail himself of the services of skilled laborers, and suggestions and improvements coming from them are to be considered part and parcel of the original invention. Spofford et al *v.* Moore et al. C. D., 1870, p. 6.

An employor engaged in working out a preconceived plan is entitled to make use of the auxiliary suggestions of the workman. Yost et al *v.* Powell, 13 O. G., 122 (1878).

Trade marks cannot be registered as labels. Godillot, A., *ex parte*, C. D., 1874, p. 120.

A label bearing a trade mark cannot be registered till the trade mark is registered. Park, J. D., *ex parte*, C. D., 1877, p. 45.

Systems of bookkeeping, tabulating, and the like, are not patentable. Berolsheimer, M. E., *ex parte*, C. D., 1870, p. 33.

Systems of keeping accounts, etc., are not patentable. Dick's (R.) Ext., C. D., 1872, p. 166.

Joint owners of a patent right are not co-partners, and in the absence of any express contract, each is at liberty to use his moiety as he may think fit, without any liability to or accounting to the other for profits or losses. Vose *v.* Singer, 4 Allen (Mass.), 226; DeWitt *v.* Elmira Nobles Mfg. Co., 12 N. Y. Supr. 301; *vide* Pitts *v.* Hall, 3 Blatch 201.

Patent rights are co-extensive with the United States, and are not subject to seizure and sale on execution. Stevens *v.* Gladding, 17 How. 447.

The manufacturer of a patented article can continue to affix to it the word "Patented" and the date, even after the patent has expired, without liability, under section 4,901. Wilson *v* Singer Mfg. Co., 9 Biss. 173.

Owners of a patent are tenants in common, and each, as an incident of his ownership has the right to use the patent or to manufacture under it. But neither can be compelled by his co-owner to join in such use or work, or be liable for the losses which may occur, or to account for the profits which may arise from such use. DeWitt *v.* Nobles Mfg. Co., 12 N. Y. Supr. 301.

One of joint inventors may lawfully file a caveat on the joint invention. *Ex-parte* Gray, C. D., 1877, p. 44.

If a new combination and arrangement of old elements produce a new and beneficial result never attained before, it is evidence of invention. Webster Loom Co. *v.* Higgins, 105 U. S, p. 580.

A mere aggregation of old things is not patentable and, in the sense of the patent law, is not a combination. In a combination the elemental parts must be so united that they will dependently co-operate and produce some new and useful result. Wood *v.* Packer, 17 Fed. Rep., p. 650.

The application of an old device to a new purpose, simply analogous to its old purpose, is mere double use. *Ex parte* Schoenberg, C. D., 1870, p. 36.

An old construction in a wind-mill is not patentable in a paddle wheel. *Ex-parte* Glasgow, C. D., 1870, p. 40.

An employer is not entitled to any knowledge of the independent inventions of his employee. Mallet *v.* Crosby, C. D., 1870, p. 70.

As between an employer and an employee, not specially employed to embody the invention of the former, there is no presumption of originality in favor of the employer. Johnston *v.* Pimlott, C. D., 1870, p. 44.

Curvatures and angles become of importance in plow shares, water-wheels, rotary pumps, engines and blowers, and generally in all cases when, by a change of form, a new and useful result is produced. Warner, C. D., *ex parte*, C. D., 1869, p. 41.

State Courts have no jurisdiction of suit for infringement, but are not barred out when patents come in collaterally. Goodyear *v.* The Union Rubber Company, 4 Blatch. 63.

To make experiments, then drop them and only recur to them when another and later inventor has made a success of the idea, makes them "abandoned experiments" Chipman *v.* Foles, C. D., 1864, page 44.

Abandonment of an invention once put in public use inures to the public; a subsequent inventor cannot take a patent therefor. Young *v.* Van Duzen, 16 O. G., page 95.

Alterations cannot be made in pending applications which go outside the original record and model. Gray *v.* Hale, C. D., 1871, p. 29.

An article of manufacture old as to form and general appearance may have intrinsic qualities due to the process of its manufacture which make it a new and patentable product. *Ex parte* Hopson and Brooks, C. D., 1871, p. 180.

An attorney may retain a client's patent until his fees are paid. *Ex parte* Boners, 16 O. G. 1,004

A patent right, like any other personal property, is understood by Congress to invest in the executors and administrators of the patentee, if he dies without having assigned it. Shore Relief Valve Co. *v.* City of New Bedford, 28 O. G. 283; Com. Dec. 1884, page 289; 19th Fed. Rep. 753.

If an employee makes an invention and permits his employer to use it before making application for a patent without demanding any compensation, a license to continue the use may be implied. McClurg *v.* Kingland, 1 How. 202; 2 Robb., 105; Slemmer's Appeal, 58 Penn. St. 155; Chabot *v.* Buttonhole Co., 6 Fish, 71.

Every person who pays the patentee for a license to use his process becomes the owner of the product and may sell it to whom he pleases or apply it to any purpose, unless he binds himself by covenants to restrict his right of making and vending certain articles that may interfere with the special business of some other licensee. Met. Washing Machine Co., *v.* Earle, 2 Fish, 203; 3 Wall., Jr. 320.

A "shop-right" is a personal license and is not assignable. Gibbs *v.* Hoefner, 19 Fed. Rep. 323; 22 Blatch. 36.

A purchaser of patented articles from a territorial assignee does not acquire the right to sell the article in the course of trade outside the territory granted to his vendor. Hatch *v.* Adams, 29 O. G. 776; Com. Dec. 1884, p. 459; 22 Fed. Rep. 434.

A territorial grantee cannot be restrained from advertising and selling within his territory, even though the purchasers may take the patented article outside of the vendor's territory. Hatch *v.* Hall, 30 O. G. 1,096; 22 Fed. Rep. 438.

Although an assignment of patent is not recorded within three months, it is binding on the assignor, and he cannot sell it again. *Ex parte* Waters, Com. Dec. 1869, p. 42.

A State or municipality may require the taking out of a license for the sale of the manufactured article, and the fact that the article is produced under a patent will not defeat this power. Webber *v.* Virginia, 20 O. G. 369: Com. Dec. 1881, page 326; 103 U. S. 344; Patterson *v.* Commonwealth, 11 Bush (Ky.) 311; People *v.* Russell, 25 O. G. 504; Com. Dec. 1883, p. 487; 14 N. W. Rep. 568; 49 Mich. 617.

Perpetual motion devices will not be patented. Smith, W. L., *ex parte*, C. D. 1873, p. 144.

Adulterations of food are not patentable. Weida, P. W., *ex parte*, C. D., 1874, p. 118.

A method of transacting business is not patentable. Pierce, W. W., *ex parte* C. D., 1877, p. 46.

Doubts as to the patentability, when a really new thing is produced, ought to be resolved in favor of the inventor. Bond, T., *ex parte*, C. D., 1870, p. 2.

Prior use or knowledge abroad cannot affect the United States patent. Grell *v.* Kuhnert, C. D., 1869, p. 5.

ÆSOPHAGOTOMY FOR THE REMOVAL OF AN ARTIFICIAL PLATE RETAINED FIVE YEARS AND NINE MONTHS.

[Translated for the ODONTOGRAPHIC JOURNAL.]

E. B., aged 44 years, mother of many children, was first taken to the Sussex County Hospital, November 6, 1889. She complained of an increasing difficulty, was feeble, yet well nourished. She related that in May, 1884, the plate slipped from her upper jaw to the throat, where it stuck fast; attempts to withdraw it only pushed it farther down, out of sight. She indicated the position of the object as about an inch below the larynx.

Examination showed an obstruction about ten inches below the teeth, and all attempts to remove it with forceps, were without result. The following January she was again brought to the hospital, and in February æsophagotomy was performed under the influeuce of chloroform The usual incision was made at the border of the left sterno-mastoideus, about three inches in length, the omo-hyoideus cut through, the carotid drawn out and the trachea and thyroid gland pushed aside, so that the æsophagus, with the recurrent nerve, lay free; a firm sound was introduced by the mouth and held at the place where it met the obstruction. At this point the æsophagus was opened. The foreign body could be felt with the finger through the incision, lying somewhat obliquely, the upper part projecting into the æsophagus, the lower portion imbedded in a pouch of connective tissue, its irregular form so firmly enclosed as to oppose great difficulty to the extraction. After many attempts it was at length removed; about thirty grains of blood issued from the wound. A small artery of the sterno-mastoideus was ligated, and the wound dressed with carbolic acid. The æsophagus was not stitched. The upper part of the wound was drawn together, the lower part left open for drainage. The operation was followed by a disposition to vomit, without result therefrom. The wound and the mouth were often cleansed with two per cent. boric acid, which the patient was also required to swallow.

For the first two days no nourishment was given through the mouth, but only some pancreatised beef tea by the rectum every four hours. In spite of all the precautions, the odor from the wound and the saliva was offensive. As the third day showed no disposition to to heal on the part of the wound, and the patient was very weak, the attempt was made to introduce food into the stomach by means of an elastic catheter. The entrance of the instrument induced choking spasms, and only thirty grains could be conducted into the stomach, and this quickly regurgitated through the wound.

The fifth day a soft, very thin catheter was tried, pushed as far as the lower part of the wound, and some milk, with difficulty, allowed to trickle in, but again it regurgitated by the wound.

The introduction of the catheters into the æsophagus, which had become unaccustomed to solid food, caused spasm. In the course of the day the patient grew very week and complained of great hunger. The wound was covered with grey exudation, and the neck was red and swollen as far as the clavicle.

At evening the patient was placed upright in bed and allowed to drink milk in the usual manner. She took 300 grains eagerly, and very little regurgitated through the wound. She commenced to mend, the redness and swelling were soon reduced, and in a week she could take solid food. Twenty-eight days after the operation she was discharged cured.

No injury to the voice was sustained.—*Zahntechnische Reform.*

VEGETARIANISM.

[Translated for the ODONTOGRAPHIC JOURNAL.]

The August number of *L'Art Dentaire* opens with a chapter from Dr. Bonnejoy's work with the above title, which treats of the connection between the food and the teeth of man.

The character of the teeth, says the author, among other things, is a plain indication that nature did not intend a flesh diet for man ; our teeth are not shaped like those of the carnivora, the felines, for example, which have pointed teeth for tearing flesh, but like those of the anthropoid apes, whose food is exclusively vegetable.

Bonnejoy grants it true that man can bear a flesh diet, but nevertheless maintains it to be unnatural, and only admissible bv way of exception, in times of scarcity of edible vegetables, in the same way that argillaceous earth is eaten to prevent starvation, and unpalatable herbs and roots ; analogously, the flesh-eating animals may be fed periodically with bread and roots, the apes upon flesh, without permanently changing thereby the character fitted to them by nature.

The writer is of the opinion that caries and other diseases of our teeth originate from continuous contact with flesh and its derivatives, and sees in the circumstance that the teeth of the carnivora are not thus unfavorably affected, plain evidence that nature destined man for a vegetable diet alone. It is asserted in proof of this hypothesis, that vegetarians who have been so strictly from birth, possess white and healthy teeth, which they retain to very old age.—*Vierteljahrsschrift für Zahnheilkunde.*

EXCERPTA.

[Mostly from the French and expressly for the ODONTOGRAPHIC JOURNAL.]

In China, where age is respected and honored in the highest degree, the most polite question that can be asked of any one arrived at advanced age, is : "How are your respectable teeth ?" This indicates that he has probably attained an age when the teeth begin to fall out, and at which he merits in consequence the respect and veneration of those younger. It is therefore a great compliment to offer a person.

It is said that the best dentist of to-day in Europe, for extractions, is the monk Fra Orsenico, of Rome, who operates by the Japanese process, that is to say, without instruments, using only the thumb and index finger. He makes nearly one hundred extractions every day, but there are days in which the number reaches four hundred ; in his room are two great boxes containing thousands of teeth of all sorts.

It has long been known that regeneration of diseased bone may be brought about, if care be taken in ablation to preserve the periosteum, which becomes the seat of true osseous secretion ending in the production of a new bone sufficing to sustain its functions.

Whenever the bone taken away exceeds certain dimensions, it becomes impossible to maintain the periosteum in a position permitting the secretion of new bone adequate to replace, in form and volume, the one removed, and the end sought is not attained.

M. Le Dentu has hit upon the idea of introducing a decalcified bone of suitable size, making good the loss of substance by excision

This foreign body, very well tolerated if all the requisite antiseptic precautions are taken, permits the activity of the periosteum throughout its extent, disappearing by absorption as fast as the new bone is formed.

Experiment has proved that newly born infants can and will grasp a walking stick with both hands and thus sustain their whole weight from ten to thirty seconds. At two weeks they will hang for two minutes. One baby ten days old held on ten seconds by both hands, then let go with one, as if contemplating a fresh hold, and sustained its weight five seconds longer by one hand only.

These experiments had in view the Darwinian idea of a Simian origin, and the pose with the thighs flexed nearly at right angles, was strongly suggestive of the chimpanzee.

I know a youngerly mother who was very indignant when told of the above, and she would like to know how many poor, little, helpless infants Dr. ——— has killed in these positively frightful experiments. For my part I always supposed the flexed thighs and knees resulted from involution in the bud, as we would call it in botany, not yet overcome by further development.

And now a bacillus has got into the school ink-well, where he cavorteth himself and disporteth his long Latin name like a veritable sea serpent's tail. He liveth on the logwood, and maketh the ink stringy, and thus spoileth the ammunition and disconcerteth the aim of the poor young idea when he goeth to shoot his trammels and pot hooks. Next?

At least 2,000 children of from one to two years of age die annually in Paris of tuberculosis, a quarter of the entire mortality at that age. Cause, contagion lurking in the walls and floors of the dwellings.

The Academy of Medicine has just held a *séance*, and the caricaturist of one of the Paris Journals records the triumph of a celebrated surgeon who has re-made a Chilian soldier blown up by a shell. He now sports a silver nose, of the shape and size of that of the average respectable father of a family; the olfactory opparatus of the hound, extremely useful; calves' feet, with nice, comfortable hoofs for wet weather; the throat of a nightingale, for opera music; the stomach of an ostrich, enabling him to digest wooden pavement; teeth from elephants' tusks, which can chew pebbles; nerves from the ox in his arms, for lifting heavy weights; crocodile skin on his back, with pockets for correspondence ; one eagle and one partridge eye, in order to vary the expression in the greatest degree.

The Academy gave Dr. Z. a vote of congratulations, and the remarkable Chilian was sent to the *Jardin des Plantes.*

A TWIN GROWTH.

[Translated for the Odontographic Journal.]

A seamstress, aged sixteen, came to me for relief from pain in the inferior right first bicuspid, filled with lead. The mesial surface was destroyed by caries, the pulp cavity perforated, the gum on the buccal surface red and inflamed ; pressure showed discolored pus at the margin. Local inspection revealed surprisingly abnormal position and form.

Conservative treatment was impossible, gangrene of the pulp having followed pericemental inflammation ; therefore I advised extraction.

This tooth showed two crowns, blended together, inclined toward each other at an angle of 30°. Between the two distinctly developed yet blended crowns, was a prominence of enamel, the size of a pinhead ; beneath this was a fold of enamel, six millimeters long, two millimeters high, which had a rootlike, downward extension. This connection, by means of a fold of enamel, suggested the idea of the rudimentary development of still third tooth.

The center of each crown being pierced, led to a single crown pulp cavity, extending into a common root canal.—*Vierteljahrsschrift für Zahnheilkunde.*

WORE THEM IN HER STOMACH TWO YEARS.

[Translated for the Odontographic Journal.]

The Berlin *Daily Leaf* reports an interesting operation which was performed upon an old woman. The patient, who came from Madgeburg to Berlin for the operation, had long complained of insupportable distress in the stomach, the cause of which the attending physicians were unable to determine. Finally it was decided to make a surgical investigation. It was successful, the cause of the disturbance being discovered, in the shape of two artificial teeth. The woman recalled to mind that the two teeth had unaccountably disappeared two years before, and that she had suffered the pain in the stomach since about that time ; probably she had swallowed them during sleep. The two foreign bodies had given rise to dangerous inflammation in the stomach. The patient experienced immediate relief, and was soon after discharged as cured.—*Journal für Zahnheilkunde.*

ALL FACTS ARE VALUABLE.

Probably every worker in science at times feels like throwing down his tools and crying, "What is the use? I can contribute only an atom to the sum of the world's knowledge."

Pick up your forceps and scalpel. It is just that atom that the world wants from you. The structure of our modern cosmos is so intricate that no man can trace all the interdependencies in a given case. You may have made only one original discovery in the year; but that one bit of knowledge may revolutionize the policy of nations within a decade. Every fact is wheat, and the only chaff is untruth. Thererefore study, observe, record.

Recent experiments by Michelson furnish the physiological proof that the sense of taste is actually possessed by the epiglottis.

Even if filtration does not actually diminish the number of germs in the water, it removes a large proportion of the organic matter on which the germs depend for food.—*American Monthly Microscopical Journal.*

USE OF NATURAL ENAMEL FOR FILLING TEETH.

[Translated from *L'Odontologie* for the ODONTOGRAPHIC JOURNAL.]

By Antoine Denis, of the Paris École Dentaire, under suggestion from M. Heidê, one of its professors.

A left superior canine and bicuspid, median surface, and a right superior canine, distal surface, carious in the fourth degree, without serious complication with the periosteum, were treated as is usual in such cases, the teeth cared for, the canals stopped with antiseptic substance, and the pulp chamber filled with gutta percha; the next process was the filling of the cavities proper. The weak edges of the enamel were cut away, and the solid edges made into as regular a form as possible, in order to facilitate the adjustment of the pieces of enamel destined for this use. These were taken from natural teeth selected of form and size most nearly approaching those of the teeth to be filled, and detached by the saw, then filed to an exact fit in the cavities, prepared each to each.

The enamel was in each case lined by a layer of cement, affording the possibility of three small cavities with circular groves, for the purpose of retaining the cement which was to unite the pieces of enamel to the tooth. In the edge of the piece of enamel which was to be nearest the palatal vault, a small dove-tail was filed to give firmness. All being ready, the piece was placed in position, the filling being of Contenau and Godart cement, of a consistence sufficiently liquid to permit the superfluity to escape easily by the dove-tails cut at the back, this excess being removed after the cement had become well hardened.

The other case was of the fourth degree in the median surface of a left superior canine. After the usual antiseptic treatment, washing out with chloride of zinc, after having subdued the periostitis which supervened, by the help of applications of iodine and aconite mixed in equal parts, the permanent filling was next in order. The cavity, quite extensive, was cut with an enamel chisel in such a way as to allow of a more easy adjustment of the piece of enamel to be introduced. The latter was sawn from a natural canine, then fitted to the tooth by filing. Some thickness of dentine was preserved, to afford the possibility of making a slight cavity with circular groove for the retention of the cement which was to unite the piece of enamel to the tooth wasted by caries.

Upon the posterior face of the piece of enamel a small dove-tail was made, which, with the grooved cavity, afforded complete solidity.

After these preparations the piece of enamel was put in permanent place and fixed with cement, as in the previous case. After hardening, the superfluous particles of cement were ground off, and the person was left to herself. The work,seen after eight days,is in a perfect state, in spite of mastication, and it would seem that it ought to preserve for a long time to come, the solidity which it has kept until now.

HERE AND THERE.

The injurious qualities of dentifrice of powdered charcoal are well known to dentists. Dr. Eysautier has lately demonstrated that the particles of charcoal penetrate the tooth and the mucous membrane, forming a dark border, to the inexperienced eye not unlike that produced by mercurial poisoning. Charcoal deteriorates the enamel and contributes to the progress of dental caries. By separating the teeth from the periosteum, the particles of charcoal tend to loosen the teeth, causing pain and favoring deposits of tartar. The use of charcoal to-day is explained by long custom; it is an ancient remedy, though not older than urine, which used to be employed for cleansing (?) the teeth. This custom is mentioned by Strabo.—*Dauphin Mèdical.*

The sanitary board *supérieur* of Vienna is of the opinion that the repeated use of prescriptions for gargling the throat which contain solutions of salycilic acid, may injure the teeth and gums.

Iodoform is more easily dissolved in alcohol and either, if there is camphor already dissolved in them. Alcohol dissolves only 1¼ per cent of iodoform; a saturated solution of camphor will take 10 per cent.—*Zahntechnische Reform.*

Drs. Sevill and Pound, of London, following out the experiments of Dr. Miller, of Berlin, have found that the best medium for artificial production of caries, is a mixture of one part of the crumb of bread to eight parts saliva. On placing a tooth in this mixture, warming the whole in glasses stopped with mercury to a temperature of 35° to 37° Centigrade, the liquid is observed to quickly become acid, from the formation of acetic and lactic acids; then are observed all the phenomena characterizing the formation of caries. If the tooth be entirely submerged, its whole surface is destroyed. In case of natural or artificial faults in the enamel, the action is more rapid; the dentine becomes carious much more quickly than the enamel. None of the phenomena differ in any way from those observed in natural caries.—*L'Odontologie.*

It is well known that a smooth disc of steel driven at a high speed will cut into a file held to the edge of the disc. The principle does not seem to have been practically used, save in one instance named by Mr. Richards, the well known engineer, who states that it was employed in the United States armory at Springfield, in preparing a tenon, or reduced section, on the ends of tempered steel ramrods, such as were used in loading the muskets of twenty-five years ago. The material was hard and could not be cut, so small wheels of iron, about six inches in diameter and one inch thick, were used. They were driven at six thousand revolutions per minute, and melted or abraded the metal away instantly, at the same time drawing the temper, so that a screw thread could afterward be cut on the end of the tempered rod.—*Exchange.*

ROCHESTER DENTAL SOCIETY.

The meetings for the year were begun in October, with Dr. La-Salle, who spoke on "Aluminum, its uses in dentistry in its present improved form." He had received the material by the pound from parties in Lockport, had it rolled in New York, and was then making dentures of it, fixing the teeth with rubber.

Those who had had much experience with the ancient variety said they had got through with aluminum for all time, the advantages claimed for it not justifying a repetition of the experiments performed by them in the past. It was light, of uniform thickness, and gave metallic contact with the gums, and this was the best that could be said of it.

Aluminum amalgam was mentioned. It made a handsome filling as amalgams go, but had not been in use long enough to bear the test of time.

Dr. Hofheinz greeted the members at his office for the December meeting, offering as provocative of discussion a series of questions as follows :

"Are we amply paid for our services?" To this there was but one answer—"No."

"What can we do to increase our remuneration?" "Ask and he shall receive," "Strike," etc. The summing up seemed to be the educating of the people to a fuller and better appreciation of the value of professional services ; that the service rendered was far beyond the present limit of compensation.

"What can we do to improve our social relations?" Frequent visits each to the other's office and home. But it was objected to visits to the office, that they would occur necessarily during office hours, when the visited would certainly be busy, or when the visitor should be. To visit each the other's home it was objected that these could not be made, on account of other and at least equally important engagements elsewhere—prayer-meeting, play,concert, social, etc. While it was admitted on all sides that something of the kind should be done, it was finally conceded a difficult thing to bring about and continue.

"What is the best mode of sterilizing instruments?" In general boiling water, plain or with bi-carbonate of soda, steam as generated in patent sterilizers, etc.

"How can we increase the interest in our city-meetings?" Make them so good that no one can afford to stay away. Do this by presenting a paper of practical interest to every man present, and by chairless demonstrations. As to this latter it was agreed that no two members present prepared oxyphosphate mixtures in anything like the same manner, nor could anyone repeat another in so simple an act as the mixing of plaster of Paris. Papers plus demonstrations it was thought would fill the bill.

"Should not the subject be announced before hand?" The failure to do this kept members in the dark as to the work of the evening until the conclusion of the paper, and as a consequence the discussion was apt to become desultory in the extreme.

These questions occupied the attention of the society over two hours, the full benefit of the discussion of which was necessarily limited to those present, as our reporter failed to keep full notes. It demonstrated conclusively that even a paper was not at all times essential to the success of these gatherings.

The December meeting was held with Dr. Howard who took up and discussed most entertainingly "The relative frequency of decay and salivary deposits in the lower animals."

He had spent a little time at Ward's natural science establishment, and with reference to the subject for the evening described a total of 59 skulls.

Of these, 16 were skulls of bears, 12 of which were free from decay. One grizzly bear had a decayed molar in the right of the upper jaw; it had been worn into the pulp chamber and in these places decay had made some progress; the wear was greater than in any other tooth.

In 2 of these skulls, salivary calculus showed itself on the buccal surface of the upper molars of both sides; on both upper and one side of lower, 1.

Teeth of the following skulls were found free from decay and tartar: Leopard, 3; lion, 5; puma, 1; lynx, 3; fox, 3; coyote, 1; sable, 1. In an ottar a deposit of lime was found in a fissure in the buccal surface of a superior molar, and one small surface decay; the skull was that of a very old animal. In the case of the only hyena examined, a little tartar was found in a fissure of the buccal surface of one upper molar.

Of wolves, 2 were free from decay; 1 had a trifle of tartar on the outside of one upper molar.

The total number of dogs examined was 13. Of these, 7 were free from decay and deposits of lime; 2 without decay, but with upper molars somewhat incrusted; 4 with more or less decay. Of these four, 2 had slight decay of one tooth each ; one had lost the upper left first molar. One had thirteen places of decay, all superficial. In this animal (an old one) the decay was not confined as closely to the gum margin as in the others One had decay of six teeth, all at the gum margin. This same dog had lost two premolars. An abcess had formed at the posterior root of the first molar back of those just mentioned, perforating the outer plate of the alveolar process.

Of mountain goat, 8 were examined. The older ones all had calculus on the outer surfaces of the upper molars ; one a slight deposit on the lower molar. Except in the very young animals the teeth were much discolored. One had slight decay in a molar. In another the bone on each side of the upper jaw showed very plainly the effects of disease.

In commenting on these the speaker called particular attention to the deposits on the upper molars, a condition found exceptional in the lower. Also to the fact that herbivorous animals were specially favored by deposits of lime on the teeth. Special attention was also called to the wretched showing made by the dog, a condition that marked him as a not altogether unfit companion to man as a factor in modern civilization.

The remarks were illustrated by a series of skulls owned by the speaker; also a beautiful series illustrating types, the property of Dr. Hofheinz.

Dentistry on the stage fell through at Proctor's Theatre, in New York, a short time since, and is gone, let us hope, for good. Some of it reads well now and then in the daily papers, but the general public is too familiar with its practical details to relish their reproduction under the circumstances in question. This is what the *Mail and Express*, (N. Y.) says of it : "'The Junior Partner' turned out to be so bad that nothing can save it. It is a stupid, ignorant and vulgar farce, as written, and, as translated, exhibits these qualities in a more aggressive degree. Two young dentists are in love with two young women, the elder partner, a Frenchman, loving an English girl, and the nationalities being reversed in the other case. Neither girl is permitted to marry unless her husband shall be well off. The French dentist goes to London to secure a fortune, and is compelled by vulgar machinations to wed the English girl, and their return precipitates complications which are handled without care, taste, humor, probability or interest. The two or three faint flashes of humor are melancholy exceptions to the commonplace drivel, faulty grammar, slang and dullness."

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CONDUCTED BY J. EDW. LINE, D. D. S.,
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NITRATE OF SILVER.

Since the publication in the *International* of Dr. Stebbins' article on the use of silver nitrate in the treatment of decay of children's teeth, not a few have put his teaching to the test. In our own case it promises to go a long way toward solving the problem of treatment not only of the teeth in question, but all back teeth the decayed parts of which are extremely deficient in lime; the decayed dentine of which is soft, elastic and yet firmly adherent to normal tissue beneath. The application by means of a wood point of a saturated solution of the crystalline form of the salt is followed first by a yellow precepitate, later by a black deposit that stains the tissue to a depth directly as the softness. This does not enhance the beauty of the tooth, and yet it is no more objectionable to the eye than copper amalgam, the use of which silver nitrate in conjunction with the light colored amalgams ought to supercede, at least at the hands of the majority of that part of the profession now committed to copper amalgam practice.

In this connection the following may be of interest: In our early experience as a dentist we frequently saw and occasionally extracted teeth that looked as much like the natural organs as so many cubes of ebony. They had been filled with amalgam, and presented on all sides what might be described as general "eburnification." The cause of this extreme blackness had escaped us, as it had others who also had noted the phenomenon, until the appearance of Dr. Stebbin's communication, when the mystery ceased in part to be. In confirmation of this, Dr. A. M. Holmes of

Morrisville, N. Y., told us at the Buffalo meeting last October that our conjecture as to the cause of the blackening of these old teeth was the correct one ; that many practioners had used the nitrate before his day, and that he had never been without a bottle of it in his medicine case. He told us, too, of the following, which it will do well to remember now that the use of the salt in question promises to become general : A young lady, about to leave town for a year or more, wished her teeth put in as good condition as possible, and that right away. Temporizing with them was out of the question, amalgam not to be thought of, so Dr. Holmes filled them with gold, first treating the dentine thoroughly with nitrate of silver. When he had done he said to her,—"You may have to visit a dentist on account of one or two of these teeth before your return, and it is more than likely that he will call your attention to the black border to these fillings, call it decay, and advise their renewal. Now don't have them disturbed, but say, if you please, that the black border was put there by the man who filled the teeth, purposely and at the same time. Tell him also, if you choose, that I used nitrate of silver." These teeth stood for years as monuments to his judgment, likewise his skill in the black art. To those who have not read Dr. Stebbin's article, we say turn to it quickly, also the editorial comments, and begin practice on unfillable teeth in childen—teeth in which blackness is no disfigurement.

ASSISTANT EDITOR.

Beginning with the January issue, Dr. Joseph Head will enter upon his duties as Assistant Editor of the *International Dental Journal*. This will relieve Professor Truman of a great amount of work, and enable the publication company to further improve the *Journal* without all but killing the editor-in-chief in the effort. We congratulate the entire outfit.

COMPLETELY OBLITERATED PULP CANAL.

A lady of about thirty-five years had had the pulp of the superior left central incisor destroyed, the canal treated, and the cavity of decay filled and refilled until the tooth became so unsightly that she determined on a crown. The remains of the natural crown were removed, the root-filling reamed out for two-thirds of its length, and a Logan crown mounted on the root. This made such a radical change for the better that she immediately resolved on like treatment for its much-filled mate, the right central.

This tooth we indented with a corundum wheel, excised, and ground to get better view of the whereabouts of the pulp. We found a faintly dark ring in the place common to the pulp and proceeded to pierce, as we thought, the cavity of that organ. We drilled, reamed, then drilled and reamed again, and yet no pulp, no canal. This continued with the exercise of due caution until the root had been sufficiently reamed in its central and long axis to accommodate an untrimmed Logan crown pin, and yet no pulp, no canal, nor further signs of either. The crown was then set in the usual way, and up to the present (6 months after) has behaved as well regulated roots,though pulpless, and even canalless,should. The suggestion is anticipated that we had drilled and reamed between the pulp canal and periphery of the root; but this is met by the facts that the drilling and reaming were central throughout, that the root was a lean one, the pin fat.

ANOTHER VOLUME.

Dr. Catching, of "Compendium" fame, is ready for your subscription for '92. The volume will be larger than that of '91, and more valuable in every respect, which is saying a great deal. Address him at Atlanta, and don't forget to inclose a postal note for $2.50.

IN NEW FORM.

The *Bacteriological World* is now edited and published at Battle Creek, Mich., Drs. Paul Paquin, the founder of the journal, and J. H. Kellogg dividing the editorial work between them. With the November issue the form is changed and the first of a series of colored plates introduced. With its present backing and other advantages it cannot fail to make itself a necessary part of every scientific reader's outfit.

MORE DENTAL FOLLY.

There is a strong tendency on the part of some dentists to carry treatment beyond the requirements of health and comfort of the teeth, and into the realm rightfully belonging to the modern barber. For instance, after removing salivary deposts, treating the gums and the like, some operators instead of handing the patient a glass of plain water, or water with listerine, bicarbonate of soda, or other useful medicament, sprinkle or spray the oral cavity with cologne, rosadora, Florida water, or other agreeable lotion, all to the delight of the patient who, on his visits to his barber, expects and pays for bay rum, heliotrope, and the use of an electric fan to force the wind between his whiskers. Some need to remember that there is a scientific and technical side to their work, and that all embellishment outside that special work smacks of decorative art of a kind wholly within the province of others. Treat teeth, but don't coddle the patient. "Away with him"—the man who does it.

OUR CONTENTS.

The Microscope calls attention to Dr. Miller's work, in the form of a brief abstract.

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The extract from Delafield and Prudden tells briefly what is *known* of phagocytes.

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In fooling with "mind waves" don't forget the snails; but beware of the cooling effect of "Shadrack," especially the Christmas kind.

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Dr. Watt finds no difficulty whatever in answering the question, Is chemistry a science? If the reader has any doubt, let him be re-assured. Chemistry *is* a science.

* * *

Dr. Dawbar seems to have disposed most effectually of the claim by a physician of Germany of the discovery that the hypodermatic injection of water produces analgesia. The discovery is American, and the fact should hold.

* * *

The editor of the *Medical Record* discusses in a free and easy way the therapeutic value of a good shaking. Among the several things mentioned as simplifying the process we fail to find college foot-ball, an all but unpardonable oversight.

Our translated articles this month are many, varied, interesting and instructive. THE ODONTOGRAPHIC can reproduce anything published in ancient or modern language: Greek, Latin, French German, Italian or Spanish. Even Sanscrit has no terrors for the linguistic end of the conductorial staff. If the reader has any doubt about the matter, let him put us to the test.

* * *

Dr. Kells adds another to the many blows given the common notion that the oxy-chlorides and oxy-phosphates are non-conductors. His method of demonstrating the relative conductivity of filling materials has the great merit of originality, likewise the little instrument used in the demonstration. It must be put down as an oversight on the part of the *Dental Cosmos* that this latter was not illustrated.

* * *

That iron plays an important part in the coloration of carbolic acid, finds confirmation in the vials of dentists generally. Cotton is wound on steel instruments—knives, drills, broaches, etc.,—and dipped for but a moment in the bottle of acid in daily use; colorization begins immediately, and in time approximates good sherry wine, and this in carbolic acid in crystalline form. Water rich in organic matter seems to produce a similar effect, intensified, some think, by exposure to light.

* * *

The use of potash alum solutions in the mixing of plaster is by no means new, but its significance has all but escaped even the few who work by other than routine methods. The extract from *Richardson* ought to change the methods of some, especially those who frequently fail in obtaining fits. What is said of open joints, however, may be taken with allowance. Warped plaster undoubtedly has some effect, but a generous chamber the full circumference of the mould, with numerous and properly cut channels leading thereto, and a heavy flask, are of far more account in controlling this bugbear of the dental laboratory.

* * *

Prof. Truman's article in answer to the question as to where papers should be published is timely, and like everything from his able pen, full to the brim of suggestions. It should be read carefully by all, and especially by those who look for the full development of dental journalism independent of manufacturing dictation and cash. Periodicals backed by manufacturing interests are independent of the subscription list, the advertising and consequent sale of their own and others' goods more than paying the cost of issue. On the other hand, with periodicals without such backing the subscription list becomes absolutely necessary to their betterment and perpetuation.

* * *

In "Chemical Antisepsis," Dr. Kirke makes prominent two factors that are bound to be considered in the treatment of diseases having micro-organisms or their product as their cause. The high grade vitality of the micro-organisms compared with that of the tissues presents an obstacle as yet unsurmounted, and the difficulty of determining both the quantitative and the qualitative relations that must subsist between septic matter and the agent or agents applied for its reduction, but adds to the conditions of the problem. Treatment having for its fundamental principle the starvation rather than the poisoning of the micro-organism, suggests possibilities in practice long since demonstrated in the laboratory.

* * *

Prof. Taft's "Peculiar Case" brings to mind a condition of things found in fissured molars and bicuspids, and occasionally in incisors imperfect on their lingual surfaces. The patient complains of pain in mastication, and that the intensity of the pain varies with the food. Fruit adds its acid to mere pressure, but that it is the latter chiefly may be demonstrated by letting the patient chew gum, or a bit of the sheeted rubber used in making dentures. These materials are close-fitting, elastic, and when applied as a cover to a cavity lined by sensitive dentine and filled with the oral secretion, pain more or less intense must follow. We know this not only from observation, but also from personal experience. The remedy in both cases is the filling of the cavity, whether in the crown or in the tooth itself as in the article quoted.

PELLETS.

The November paper before the Stomatological Club (Buffalo) was read by Dr. W. C. Krauss; subject, "Tumors of the Lower Jaw."

"Do you know Dr. Blank, of Yokelville?"
"Yes."
"Pleasant old parrot, isn't he?"

"Doctor, that tooth wakes me up every night at precisely 12 o'clock. Odd, isn't it? What shall I do?"

"Stop the clock."

Very Likely: "Doctor, my little one is cutting teeth, and cries continually. What would you do in such a case?"

"Cry too."—*Zahntechnische Reform.*

Dental letter writing is getting to be a fine art. For excellent examples, see recent numbers of the *Dental Review.* Both periodical and writers are to be congratulated.

Dr. Barrett wants those charts you borrowed of him at the Union meeting last October. Get them to him as soon as you know how, or there'll be something to pay.

"Ah! the ladies!" One of whom sends a well known plant thusly introduced: "*Wandering Jew.* Specimen of oldest tramp on record. Unlike the common variety (*Trampus vulgaris*), he drinks only water and won't eat pie."

Some time since we saw in the *Dental Review* mention of Dr. Clowes' all-amalgam bridge work. Since then we have seen one specimen after a full year's service. From the utility standpoint it was perfection, but to look at—give us gold.

It was somewhat equivocal, but calculated to make one think a bit just the same, when a much concerned patient asked his more than busy dentist: "Well! How are things professional? Running yourself into the ground as usual?"

Titles and degrees are all right in their place, but for heaven's sake keep them off the subscription list. Abou Ben Adhem led all the rest, but he didn't do it by decorating his name with "M. D." or "D. D. S." on a half-dollar contribution to send hymn books to the heathen."

In cancelling an appointment somewhat hastily made, a patient wrote: "I made a slight error in allowing you to book me for Friday next. I am to be married that day." And he was, but had to wear a string on his finger as a reminder of the time and his obligations.

Patient: What seems to be wrong with it, doctor?

Doctor: I find it carious on the posterior proximal surface, fissured throughout the coronal aspect, with slight opacity of the enamel on the lingual side, and well marked erosion on the buccal.

Patient: Can a tooth that has all that be saved?

Dr. S. A. Freeman, Buffalo, keeper of the books of the "Whitney Library," is spending his odd evenings in bringing that collection up to date. The library may have a place in the dental exhibit at the Columbian meeting in '93. Just at present Dr. Freeman stands much in need of copies of the *Texas Dental Journal.* Correspond with him if you have any to spare.

"How is it, Doctor, that dentists make use of such hard, sharp instruments in cleaning teeth, and yet forbid the patient using even a pin?"

"My dear madam, it's simply the difference between skilled and Chinese labor."

"Oh!"

Dr. (now Prof.) Barrett delivered a lecture before a large gathering of practitioners at the Chicago College of Dental Surgery, Dec. 7th, on "The Analogies of Bone and Tooth Tissues, the Essential Identity of their Inherent Diseases, and the Demand for Like General Treatment." The lecture will be repeated later at Buffalo before the Stomatological Society.

On discovering the loss of a filling that had been several times renewed, a patient wrote his dentist:

"There's another leak in the dyke. When can you stop it up? Any afternoon but Tuesdays."

To which the dentist replied: "Damned the "leak" immediately on receipt of your note. Will dam it again Wednesday at 4 p. m."

Has any one had experience with "Something new in dentistry," in other words, with gold "reduced to a plastic about as stiff as putty and having been added where desired, it is hardened and the whole becomes one piece?" It is presented in circulars by Dr. Harris, New Albany, Ia., as "the most important advance ever made in the gold-working department of dentistry."

A physician who has a large practice among those condemned to "increase and multiply," sent his lady patients, present and prospective, two cards, as holiday reminders of the fact that he was still on the footstool, and as ready as ever to specialize in their behalf. The professional card was regular; the other, however, bore the legend: "Call upon me in the day of trouble; I will deliver thee.—Psalms L."

PERSONAL.

Dr. Watson, of Canandaigua, an esteemed member of the 7th district society, has gone to Berlin.

Dr. G. L. Curtis, so long in practice at Syracuse, has taken up his residence in New York. Oral surgery will claim his undivided attention.

BOOKS, PAMPHLETS, PERIODICALS.

DENTAL MEDICINE. A manual of Dental Materia Medica and Therapeutics. By J. F. S. Gorgas, A. M., M. D., D. D. S.: Fourth edition, revised and enlarged. Philadelphia: P. Blackiston, Son & Co. Pp. 524.

It seems to be the proper thing for the editor and publishers to exert themselves to the utmost to get out a new edition once a year of this increasingly popular work. Like the first and second editions, so with the third, every copy had been disposed of before the fourth could be got to press, a fact complimentary alike to editor, publishers and the student element of the profession.

With each edition there is necessarily some increase in size, the present limits of which, however, should not be greatly exceeded. Some things grow obsolete, others are in the experimental stage, and from both of these space can be made in future editions to keep the quantity of useful matter down and perhaps retain the present convenient proportions of the volume.

The additions to the fourth edition consist of diagnostic matter, remedies introduced or further experimented with and discussed subsequent to the appearance of its predecessor. Antiseptics are given much space, also the sterilization of instruments, likewise new and valuable formulæ. Altogether it is a book that should be used daily both for the matter it contains and the very convenient form in which the matter appears.

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